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# An annotated list of the Lepidoptera of Alberta, Canada

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## Abstract

This checklist documents the 2367 Lepidoptera species reported to occur in the province of Alberta, Canada, based on examination of the major public insect collections in Alberta and the Canadian National Collection of Insects, Arachnids and Nematodes. Records from relevant literature sources published since 1950 and from selected older works are also included. The entry for each species includes the scientific name, the author and year of publication of the original description, occurrence status, provincial distribution (according to ecoclimatic region), and adult phenology. The most recent taxonomic references are given, and common names are listed for butterflies and conspicuous moth species. The sources of specimen- and literature-based records are provided for each species. An additional 138 species whose occurrence in Alberta is probable are appended to the list. For 1524 of the listed species and subspecies, annotations are given, with selected information on taxonomy, nomenclature, distribution, habitat, and biology. An additional section provides details on 171 species erroneously reported from Alberta in previous works.

Introductory sections to the volume provide a general overview of the order Lepidoptera and review the natural regions of Alberta, the state of knowledge of their Lepidoptera faunas, and the history and current state of knowledge of Alberta Lepidoptera. Each of the 63 families (and selected subfamilies) occurring in Alberta is briefly reviewed, with information on distinguishing features, general appearance, and general biology. A bibliography and an index of genus-level, species-level, and subspecies-level names

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are provided. The list is accompanied by an appendix of proposed nomenclature changes, consisting of revised status for 25 taxa raised from synonymy to species level, and new synonymy for 20 species-level and one genus-level taxa here considered to be subjective synonyms, with resultant revised synonymy for one taxon and formalization of seven new combinations.

Status is revised for the following taxa, which were previously treated as junior subjective synonyms or as subspecies and are herein raised to species status: *Carterocephalus mandan* (Edwards, 1863); *Hesperia manitoba* (Scudder, 1874); *Colias elis* Strecker, 1885; *Nymphalis j-album* (Boisduval & LeConte, [1835]); *Euphydryas bernadetta* Leussler, 1920; *Speyeria leto* (Behr, 1862); *Boloria myrina* (Cramer, 1777); *Coenonympha inornata* Edwards, 1861; *Colostygia circumvallaria* (Taylor, 1906); *Xanthorhoe delectaria* Cassino & Swett, 1922; *Xanthorhoe lagganata* Swett & Cassino, 1920; *Scopula quinquelinearia* (Packard, 1870); *Spodolepis danbyi* (Hulst, 1898); *Hyalophora gloveri* (Strecker, 1872); *Smerinthus ophthalmica* Boisduval, 1855; *Furcula borealis* (Guérin-Méneville, 1844); *Furcula occidentalis* (Lintner, 1878); *Acronicta cyanescens* Hampson, 1909; *Oligia rampartensis* Barnes & Benjamin, 1923; *Anarta nigrolunata* Packard, 1867; *Anarta columbica* (McDunnough, 1930); *Anarta montanica* (McDunnough, 1930); *Leucania dia* (Grote, 1879); *Euxoa adumbrata thanatologia* (Dyar, 1904); and *Euxoa furtivus* (Smith, 1890).

The following new synonymies are proposed, with the valid name presented first: *Xanthorhoe algidata* (Möschler, 1874) (= *Xanthorhoe dodata* Cassino & Swett, 1920), *Macaria signaria* (Hübner, 1809) (= *Melanolophia unipunctaria* W. S. Wright, 1916; *Semiothisa marmorata* Ferguson, 1972; *Macaria? submarmorata* Walker, 1861), *Speranza occiduaria* (Packard, 1874) (= *Diastictis andersoni* Swett, 1916), *Caenurgina crassiuscula* (Haworth, 1809) (= *Caenurgina distincta* (Neumoegen, 1884)), *Tarache augustipennis* Grote, 1875 (= *Conacontia flavicosta* Smith, 1900), *Acronicta dactylina* Grote, 1874 (= *Acronicta hesperida* Smith, 1897), *Acronicta grisea* Walker, 1856 (= *Acronicta tartarea* Smith, 1903), *Acronicta lupini* Grote, 1873 (= *Merolonche ursina* Smith, 1898), *Fishia yosemitae* (Grote, 1873) (= *Fishia enthea* Grote, 1877; *Fishia betsia* Smith, 1905; *Fishia instruta* Smith, 1910), *Sutyna privata* (Walker, 1857) (= *Anytus profundus* Smith, 1900), *Mniotype ducta* (Grote, 1878) (= *Xylophasia versuta* Smith, 1895), *Mniotype tenera* (Smith, 1900) (= *Xylophasia miniota* Smith, 1908; *Hadena ferida* Smith, 1908), *Anarta decepta* (Grote, 1883) (= *Trichoclea postica* Smith, 1891), *Protorthodes incincta* (Morrison, 1874) (= *Taeniocampa utahensis* Smith, 1888; *Orthodes akalus* Strecker, 1898). The following revised synonomy is proposed, with the valid name presented first: *Xanthorhoe lagganata* Swett & Cassino, 1920 (= *Xanthorhoe incursata* var. *harveyata* Cassino & Swett, 1922). One new generic synonymy is proposed, with the valid name appearing first: *Idia* Hübner, 1813 (= *Reabotis* Smith, 1903), resulting in one new combination. Six species are transferred from *Trichoclea* Hübner to *Sideridis* Hübner, resulting in six new combinations.

**Keywords**

Alberta; Lepidoptera; checklist; distribution; faunistics

*Nomina si nescis, perit et cognitio rerum.*
—Linnaeus 1737
(Unless you know the names, your knowledge of these matters perishes.)

## Dedications

To our forebears in Alberta lepidopterology:
Frederic H. Wolley Dod and Kenneth Bowman

To my parents, Elfriede and Raymond Pohl, who built my first nets and insect boxes and who encouraged my early entomological pursuits; and to my wife, Barbara, and my children, Amelia and Colin, for supporting my continued entomological endeavors.—GRP

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The Alberta Lepidopterists' Guild

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Within this publication, GRP and BCS were primarily responsible for drafting the text in part 1 (Introduction and Background Information). In part 2 (Lepidoptera Species Recorded from Alberta), GRP prepared section 1, on micromoths, and the corresponding species notes; NGK prepared section 2, on butterflies, and the corresponding species notes; and GGA and BCS prepared section 3, on macromoths, and the corresponding species notes. Within the Appendix, NGK and BCS prepared the butterfly section, BCS prepared the Geometridae, Saturniidae, Sphingidae, and Notodontidae sections, and BCS and GGA prepared the Erebidae through Noctuidae sections. GRP was responsible for compiling and editing the final manuscript.

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# Part 1.
# Introduction and Background Information

## Introduction

In this report, originally conceived as an update to Kenneth Bowman's (1951) *Annotated List of the Lepidoptera of Alberta*, we have compiled a list of all Lepidoptera (butterflies and moths) known or likely to occur in the province of Alberta, with a summary of their geographical (by natural regions) and phenological occurrence within the province, and peak adult flight times. We have attempted to cite the sources of all of the information presented by reference to published works and to specimens in public collections. We also provide references to the taxonomic literature as an aid to identifying the species and obtaining further information. Additional brief notes on biology, taxonomy, nomenclature, distribution, and pertinent literature are also provided for many species. The report also includes a list of species that have been reported in error from Alberta, with details on their true identities. As well, an appendix lists a number of taxonomic changes that have come to our attention through the course of our work.

This document represents not only many hours of work by the authors, but also more than a century of work by previous lepidopterists in Alberta. Far from being complete, it is simply a further resolution of this incompletely known fauna. New species will likely have been discovered and described by the time the reader sees this publication. Undoubtedly this work contains errors as well, which we hope will be rectified by future workers; we nonetheless hope that such errors are not too numerous.

We hope that this list will serve as a useful reference for others and as a guide to more detailed information on the Lepidoptera species occurring in Alberta. It represents an inventory of this portion of the province's biodiversity at the beginning of the 21st century, after significant resource development, and habitat loss and degradation in the past century, but before the effects of climate change may be expressed in significant faunal and floral changes. We hope it will prove useful for future assessments of the effects of human activity and climate change, for future inventories of Lepidoptera in particular sites (protected or otherwise), for conservation planning, for pest management, and for other scholarly pursuits.

The information presented here was gathered by compiling data from specimens and published works. Specimen data were obtained from reliably identified specimens in the major public collections in Alberta and in the Canadian National Collection of Insects, Arachnids and Nematodes (CNC) in Ottawa. The identification of specimens in Alberta collections was confirmed primarily by the authors, but problematic speci-

mens were sent to other experts worldwide for confirmation. Specimens in the CNC have been confirmed by the resident lepidopterists there and also by other national and international experts. We carried out an extensive literature search for the previous half century (from about 1950 to the end of 2008), by searching the *Zoological Record* for terms relevant to North American Lepidoptera taxonomy and distribution. We also examined selected newer and older publications. Records from Alberta and adjacent regions were extracted from all papers obtained in that search.

We present the species here following the higher taxonomic arrangement of Kristensen (1999), who published the most recent comprehensive overview of Lepidoptera taxonomy, except that for the butterflies we followed the arrangement of Pelham (2008); for the Geometridae, we followed Scoble (1999) and Ferguson (2008); and for the Noctuoidea we followed Lafontaine and Schmidt (in press). As far as possible, we have used species-level nomenclature that was current as of the end of 2009, and we deal with described species only; a few exceptions have been made where undescribed species have long been recognized in published works or were in the process of being described at the time of writing. Deviations from accepted nomenclature are detailed in the notes.

## General Overview of the Lepidoptera

The insect order Lepidoptera comprises the butterflies, moths, and skippers. They can be distinguished from all other insects by their two pairs of scale-covered wings. They undergo complete metamorphosis: eggs are laid, from which larvae hatch, and a pupal stage follows, during which the final adult form takes shape.

Lepidoptera are renowned for their sense of smell. The females of most species release complex, species-specific chemical compounds (pheromones), which can be detected by males from great distances. The males locate the females by following their scent plumes, often producing their own pheromones, which are used at close range during courtship. Some moths also have a well-developed sense of hearing, which has evolved as a method to detect the sonar of bats, which are important predators of moths. One group of moths, the tiger moths (Erebidae: Arctiinae) actually produce sound to interfere with the signals of bats or to advertise chemical protection gained from plant compounds.

For most Lepidoptera species, the vast majority of the life cycle is spent in the larval stage. Most larvae feed on living plant tissue, primarily leaves, but also flowers, buds, seeds, stems, roots, and bark. Some feed externally; others are miners or borers. A few species stimulate gall formation on their host plants. Many species are very host-specific; others feed on a wide variety of plant species. The larvae of some species feed on fungi or detritus, and a few have become facultative predators or parasites. Most adult Lepidoptera live for only 1 or 2 weeks, and have a fairly specific flight period. Most adults feed on nectar, but many have atrophied mouthparts and do not feed at all, living on the fat reserves built up in the larval stage. Many species, particularly butterflies, are known to "puddle" at damp places, presumably to obtain dissolved minerals.

The Lepidoptera form an essential part of most terrestrial ecosystems. As herbivores, they help to regulate plant growth (through herbivory and nutrient cycling) and when their population levels are high they can act as agents of plant community succession. Many adult lepidopterans are important pollinators. Larvae and adults are major food sources for many other animals, including songbirds, bats, and other insects.

A few species of Lepidoptera are such good resource competitors with humans that they are considered pests. Although the proportion of species in this category is very small, it includes pests of food crops, trees and timber, and stored food products. Although only two moth species have larvae that eat silk and wool products, this extremely rare feeding habit is often misattributed to the whole group by the uninformed. Silk itself comes from human exploitation of the Silk Moth, *Bombyx mori* (Linnaeus).

## Classification of the Lepidoptera

The Lepidoptera constitute one of the four largest groups of insects, in terms of their diversity. About 180 000 species have been described (Biodiversity Institute of Ontario 2006), but many more remain undiscovered. The total number of species is probably between 300 000 and 500 000 (Scoble 1995; Kristensen et al. 2007). Most of the butterfly species have been described, but some groups of moths, particularly the micromoths, remain poorly known. The earliest Lepidoptera fossils are about 190 million years old (Grimaldi and Engel 2005), but most evolutionary radiation in the group occurred in conjunction with that of the flowering plants, in the Cretaceous Period, 65 to 145 million years ago.

Since Linnaeus first proposed a formal naming system in 1758, the classification of Lepidoptera has been subject to modification, as researchers' understanding of the evolutionary history and radiation of this group continues to be refined. The use of modern morphological and molecular techniques promise to help clarify the classification at these higher levels; see Regier et al. (2009) for a preliminary genetic analysis of Lepidoptera at the superfamily and family level.

The major evolutionary lineages of Lepidoptera are defined primarily by details of their wing venation, mouthparts, and internal structures, as well as larval and pupal characters. These characters are difficult to observe, so most workers learn to recognize the major groups on the basis of general habitus, with exceptions to these general patterns learned by experience over time. At the species level, many Lepidoptera can be identified by their wing patterns; others require examination of the complex structures of the genitalia, which usually have very good distinguishing characters.

The classification scheme adopted for this checklist (Figure 1) is as presented in Kristensen (1999), except that the unresolved trichotomy of macrolepidoptera lineages has been rearranged, so that the butterfly lineage appears in the scheme before the bombycoid lineage, for the sake of expediency; also, the Noctuoidea arrangement follows Lafontaine and Schmidt (in press). The positions of the primitive superfamilies are well supported by well-understood characters and are unlikely to change signifi-

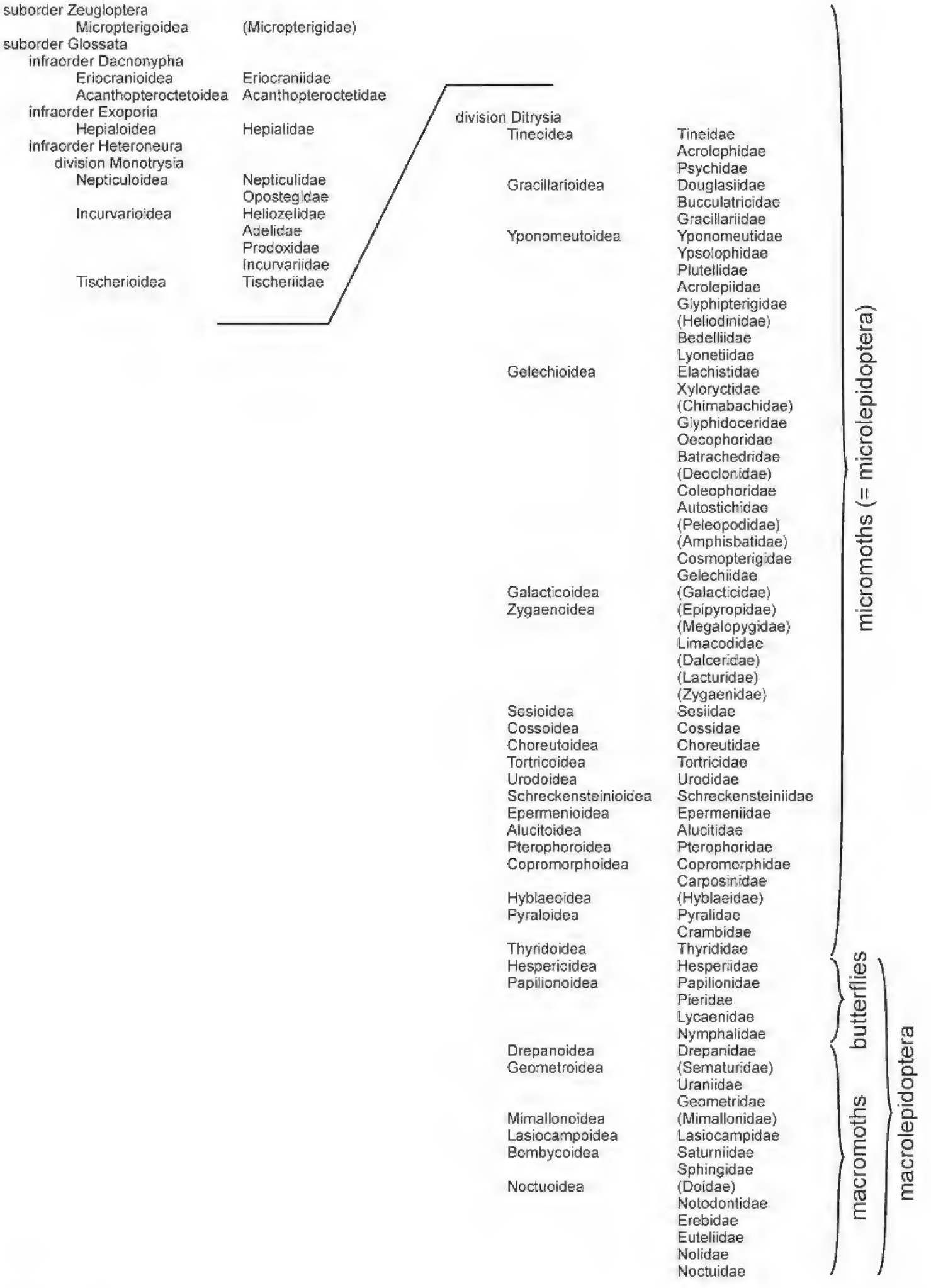


**Figure 1.** Higher classification of the North American Lepidoptera, after Kristensen (1999) and Lafontaine and Schmidt (in press). Names shown in parentheses indicate families that are not known to occur in Alberta.

cantly. Relationships among some of the higher microlepidoptera are not as clear and are considered provisional. In a preliminary analysis using molecular characters across the Ditrysia, Regier et al. (2009) found conclusive evidence that the butterflies are clearly nested within the microlepidoptera, and that the Pyraloidea consistently group with the Macrolepidoptera. However, because those results were preliminary and did not clearly resolve many other relationships within the Lepidoptera, it would be premature to adopt their findings here.

## Collecting and Observing Lepidoptera

Useful collecting, observing, and research activities can be carried out by both amateur and professional lepidopterists. In fact, the distinction between "professional" and "amateur" is largely artificial, since virtually all lepidopterists are driven by a passion for the field, whether they are paid or not. So-called amateurs are often world-class experts who contribute large amounts of valuable information.

Butterfly watching and photography are growing forms of nature appreciation, and many organized annual butterfly counts are carried out in Alberta and elsewhere. Such counts are an excellent way to gather basic biological information on the distribution and general abundance of some of the more distinctive butterfly and moth species. Details on equipment and techniques can be found in Acorn (1993) and Winter (2000). To ensure long-lasting value, observations of all but the most distinctive species must be supported by voucher specimens, so that identifications can be confirmed or revised as new knowledge becomes available. Although many butterfly species can be identified alive in the field and subsequently released, most moth species cannot be identified reliably until they are examined under a microscope. Because the nomenclature changes over time as new species are discovered and the understanding of existing species is refined, it is very important in research to collect and save vouchers of the species being studied. Without voucher collections, it would have been impossible for the authors of this checklist to verify the species reported here and to document the misidentifications that have been reported over the years.

The assembling of a Lepidoptera collection is an extremely useful endeavor that promotes our appreciation and understanding of these little-known creatures (Pohl 2009). These specimens are used by taxonomists to identify and describe species, to determine their distributions, and to support virtually all other areas of Lepidoptera research. To ensure their value for scientific study, collected specimens should have locality and date information attached, and they should be safeguarded to ensure their long-term safety. Properly labeled and cared-for specimens are extremely valuable to scientific researchers; private collections should be made available to qualified researchers for examination, and, when no longer required or wanted by the collector, they should be offered to a public facility where they will be available to future workers as well.

We recommend that Lepidoptera collecting be limited to sampling a population, not unnecessarily depleting it, and that restraint be exercised where the health of a

particular population is unknown. We do not support mass commercial collecting, a practice carried out by people who are not interested in the biological aspects of insects, but simply in the acquisition of specimens or the money that similarly minded people are willing to pay for them. We make a clear distinction between that form of collecting and the collecting undertaken by the many amateur hobbyists who pursue insects to learn more about them.

For some research, it is necessary to collect and rear specimens or otherwise keep them alive for a time in captivity. Any such specimens that are returned alive to the wild should be returned only to the region where they originated and should be released in suitable habitat.

Collectors should always respect private property and local regulations pertaining to controlled areas and species or habitat protection. They should always comply with provincial, federal, and international regulations regarding the collection, possession, import, and export of protected species and live material.

Butterflies and diurnal and crepuscular moths are most commonly collected with hand nets. Some diurnal species can be collected in bait traps, which are essentially screen cages suspended over an attractant such as fermenting fruit.

Nocturnal moths can be attracted to bait as well, but they are most often collected by attracting them to lights and then either trapping them or collecting them by hand. Regular incandescent lights attract many species, but lights with more emissions in the ultraviolet (UV) portion of the spectrum, such as mercury vapor lights (producing visible and UV light) and specialized fluorescent lights (producing primarily UV light), generally attract greater numbers and diversity. A moth trap usually consists of a container covered with a funnel, suspended below a light with some baffles around it. When attracted moths strike the baffles, they fall through the funnel into the collecting container and become trapped. Dichlorvos or ethyl acetate is usually placed in the trap to kill the moths and thus to prevent them from escaping or damaging themselves. Traps can also be used without poison, which allows the release of any unwanted specimens, but this approach often results in damaged specimens that are of little use in taxonomic research.

Another method for collecting Lepidoptera is to find the larvae on their hosts. Such larvae can be preserved as immatures or reared to adults. They can either be enclosed and reared directly on the host plant or brought indoors and tended until they pupate and the adult emerges. For two excellent overviews of collecting techniques, see Young (1997) and Winter (2000).

## Conservation of the Lepidoptera

Butterflies and moths are a major component of biodiversity, so they form an important part of the natural environment. As a "renewable resource," they have a huge capacity for reproduction, so most species are relatively resilient to population fluctuations. However, humans are exerting unprecedented pressures on all of the earth's ecosystems, and such pressures may affect all species. Most attention has fo-

cused on the "charismatic megafauna"—mammals, birds, and other vertebrates. The vast majority of invertebrate species are too poorly known to allow an assessment of how they are affected by human activities, and what might be done to mitigate the damage that humans cause. In most cases, the best that can be done at this time is to attempt to conserve their habitats and hope that most species living there will continue to thrive.

Butterflies are the "charismatic megafauna" of the insect world. They are conspicuous and relatively well known and thus have received some attention from environmentalists and conservation biologists in recent years; for example, see New (1997) for a thorough treatment of butterfly conservation. More recently, moths have begun to attract attention as well (New 2004). In Europe, enough is known of distributions and population levels that recent changes in abundance have been documented for many species (Conrad et al. 2006). The Xerces Society for Invertebrate Conservation, named after the Xerces Blue butterfly (*Glaucopsyche xerces* (Boisduval)), which was driven to extinction in California in the 1940s, was created in 1971 and is dedicated to the protection of endangered invertebrates (available on-line at http://www.xerces.org/; Xerces Society for Invertebrate Conservation 2007).

By far the greatest threat to butterflies and moths is habitat destruction, from agriculture, forestry, mining and other industrial activities, urbanization, and climate change. Other threats, of varying severity, are pesticide use, pollution, artificial lighting, and the spread of non-native species. The abundance and distribution of most Lepidoptera species in North America are not well enough known to allow measurement of declines. However, in Europe, the species are better known, and there are more documented examples of decreases in native species and increases in non-native species there (Young 1997).

The collection of insects has sometimes been raised as a potential threat to populations, but the overwhelming opinion of informed environmentalists is that responsible collecting does far more benefit, in terms of providing information, than harm (Acorn 1993; Young 1997; Covell 1999; Pyle 2002). Like other insects, most butterflies and moths are so abundant, so prolific, and so difficult to catch that collectors would be unable to eradicate a healthy population. The only way that collectors could possibly exert enough pressure to threaten an insect population would be if the population was already so small that it was in serious trouble from other factors.

Most provinces and states in North America have assessed the relative health of the butterfly species occurring within their borders. Within Alberta, the Alberta Natural Heritage Information Centre (ANHIC) maintains a tracking list, with provincial and global status ranks for 67 butterfly species and 7 moth species (ANHIC 2007). At the federal level, NatureServe Canada maintains provincial, national and global rankings for most Canadian butterflies and for selected moth groups (NatureServe Canada 2007).

In Canada, protected status for threatened and endangered species can be designated federally under the Species at Risk Act (SARA) and provincially under various provincial legislative acts (the Alberta Wildlife Act in Alberta). At the federal level, the

Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses candidate species and then makes a recommendation for protected status under SARA. The assessment process is lengthy, so COSEWIC maintains a prioritized candidate list and assesses a small number of species each year. Among invertebrates, most high-priority butterfly species have already been assessed, and attention is now being directed at other groups. This includes some better-known moth species, particularly those dependent on rare host plants and those associated with seriously threatened habitats such as sand dunes. Currently, 28 butterfly and moth species have been assessed federally for conservation status, 11 of which occur in Alberta (Table 1). The most recent summary report of species at risk (COSEWIC 2009a) and detailed status reports are available on the COSEWIC website (available on-line at http://www.cosewic.gc.ca/eng/sct5/index_e.cfm; COSEWIC 2009b). A list of species protected under SARA is available on the SARA registry website (available on-line at http://www.sararegistry.gc.ca/default_e.cfm; SARA 2008).

At the provincial level in Alberta, species are assessed by the Alberta Endangered Species Conservation Committee (AESCC). The committee then makes recommendations to the provincial minister of Sustainable Resource Development regarding a designation. At the time of writing, such provincial designations offer no formal protection because invertebrates are not recognized as "wildlife" under the Alberta Wildlife Act. Nevertheless, the AESCC has carried out provincial assessments of invertebrates, but to date this has only been done for species that have already been designated feder-

**Table 1.** Alberta Lepidoptera species assessed for conservation status by COSEWIC and resulting SARA protection[1]

| Scientific name | Common name | Assessment year | COSEWIC recommendation | SARA protection |
|---|---|---|---|---|
| *Schinia avemensis* | Gold-edged Gem | 2006 | Endangered | Endangered |
| *Satyrium semiluna* | Half-moon Hairstreak | 2006 | Endangered | Endangered |
| *Prodoxus quinquepunctella* | Five-spotted Bogus Yucca Moth | 2006 | Endangered | Endangered |
| *Tegeticula corruptrix* | Non-pollinating Yucca Moth | 2006 | Endangered | Endangered |
| *Tegeticula yuccasella* | Yucca Moth | 2002 | Endangered | Endangered |
| *Schinia verna* | Verna's Flower Moth | 2005 | Threatened | Pending |
| *Danaus plexippus* | Monarch | 2001 | Special concern | Special concern |
| *Limenitis weidemeyerii* | Weidemeyer's Admiral | 2000 | Special concern | Special concern |
| *Melaporphyria immortua* | Dark-banded Flower Gem | 2005 | Data deficient | None |
| *Copablepharon grandis* | Pale Yellow Dune Moth | 2007 | Special concern | Pending |
| *Copablepharon longipenne* | Dusky Dune Moth | 2007 | Endangered | Pending |

[1] COSEWIC = Committee on the Status of Endangered Wildlife in Canada; SARA = Species at Risk Act.

ally. At the time of writing, only one Lepidoptera species (*Limenitis weidemeyerii* Edwards) was provincially designated, but a second species (*Tegeticula yuccasella* (Riley)) was being assessed.

## Natural Regions of Alberta

Alberta is one of Canada's largest and most diverse provinces. With an area of about 662 950 km$^2$, it borders the Northwest Territories at 60°N and Montana at 49°N, spanning a distance of about 1220 km from north to south. The western boundary follows the crest of the Rocky Mountains along the Continental Divide to about 54°N and continues northwards along 120°W, with British Columbia to the west. Saskatchewan borders to the east at 110°W. Three main ecoclimatic regions are represented in Alberta, the Boreal, Cordilleran, and Grassland regions (Ecoregions Working Group 1989). On a broad scale, the distributions of many Lepidoptera species reflect those of the ecoclimatic regions, because of abiotic and biotic requirements such as temperature or degree-days and host-plant availability. At a finer scale, the ecoregions of Alberta are divided into six natural regions (Figure 2), which are in turn further subdivided into a total of 20 subregions (Natural Regions Committee 2006). The natural regions and subregions are defined on the basis of a combination of physical and biological features, such as hydrology, soil type, geology, precipitation, and vegetation communities (Kershaw et al. 2001). A brief overview of Alberta's natural regions is given below.

Knowledge of the Lepidoptera varies from one region to another and among taxonomic groups; for example, butterflies are relatively well known, whereas the moth fauna of many interesting habitats in a number of ecoregions are still poorly known. References to faunal inventories specific to each region are also given below, and additional references for regional butterfly accounts can be found in the extensive bibliography in Bird et al. (1995).

### Canadian Shield Natural Region

Occurring only in the extreme northeast corner of the province, this relatively small part of Alberta is characterized by exposed Canadian Shield bedrock. Other than organic soils in wetlands, there is little or no soil development. The dominant vegetation communities include Jack Pine (*Pinus banksiana* Lamb.; Pinaceae) with a ground cover of reindeer lichen (*Cladonia* spp.; Ascomycota), blueberry (*Vaccinium* spp.; Ericaeae), and Common Bearberry (*Arctostaphylos uva-ursi* (L. Spreng.); Ericaceae) ground cover on sandy plains and rock outcrops and wetland communities such as bogs of Black Spruce (*Picea mariana* (Mill.) BSP; Pinaceae) and Labrador Tea (*Rhododendron groenlandicum* (Oeder) Kron and Judd; Ericaceae). The Athabasca Plain Subregion to the south of Lake Athabasca is home to the largest sand dune complex in Alberta, and a number of endemic plants and insects occur there.

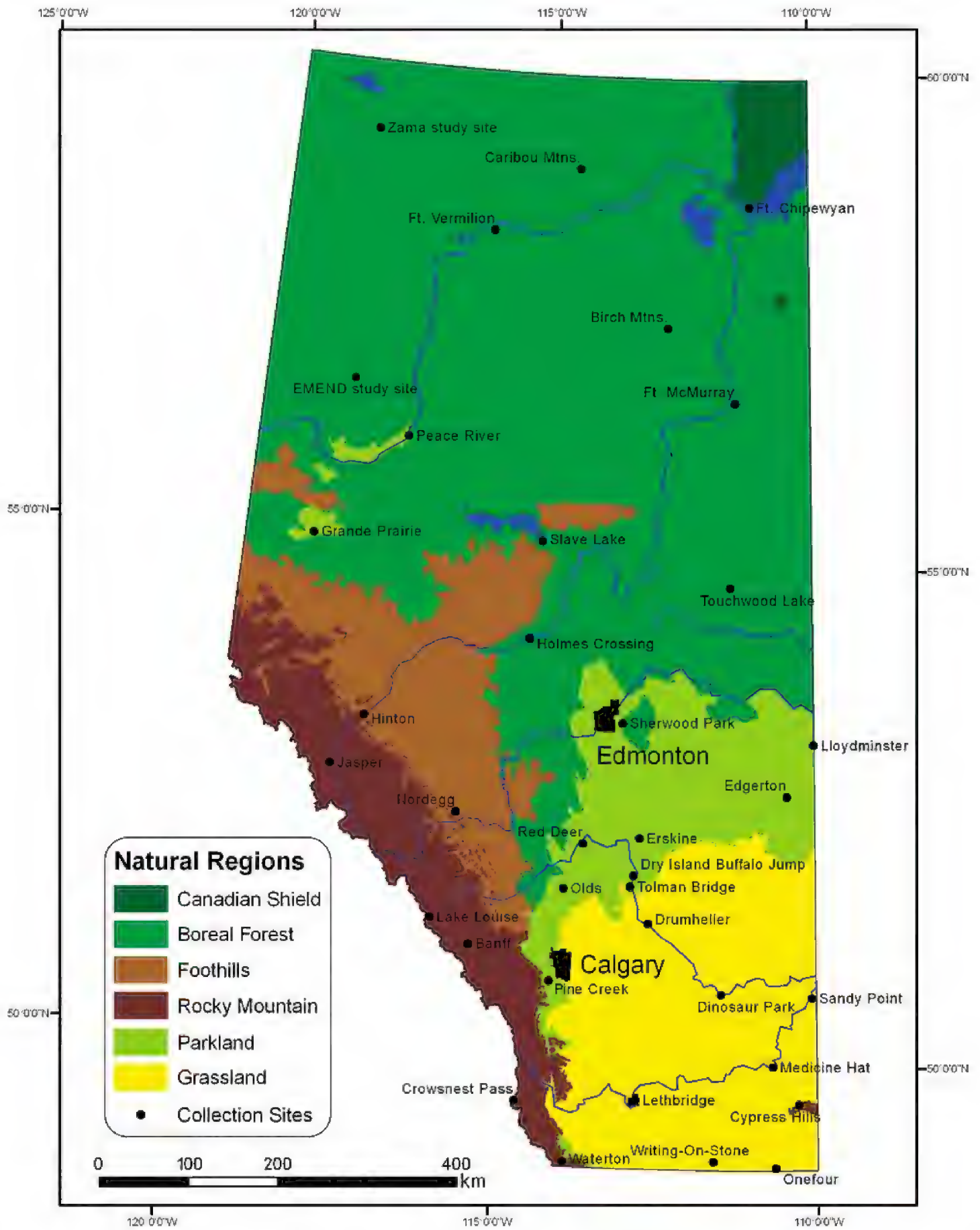


**Figure 2.** Natural regions of Alberta, modified from Natural Regions Committee (2006), with major settlements and important insect collecting localities indicated. EMEND = Ecosystem Management Emulating Natural Disturbance.

Particular sites in this region that have been surveyed for Lepidoptera include Andrew Lake (Thormin 1990), the Athabasca Plain (Schmidt and Pohl 2000), La Butte Creek and Fidler–Greywillow wildland parks (Macaulay and Pohl 2002), and Colin–Cornwall Lakes Wildland Park (Macaulay and Pohl 2003). The fauna is character-

ized primarily by boreal transcontinental species. Several Lepidoptera species such as *Nemoria rubrifrontaria* and *Eupithecia russeliata* are currently known only from this region. Characteristic species of this region include *Agriades glandon manitoba*, *Lapara bombycoides*, *Eufidonia discospilata*, and *Mesothea incertata*; *Euxoa cursoria wirima* is a dune specialist that occurs in the Athabasca Sand Dunes.

## Boreal Forest Natural Region

The majority of Alberta's land base consists of boreal forest. The flora and fauna of this region generally occur across much of Canada, and are very diverse as a result of the rich vegetation communities, which often form a patchwork of wetland and upland communities. Mixedwood forests contain both deciduous and coniferous trees, primarily Trembling Aspen (*Populus tremuloides* Michx.; Salicaceae), Balsam Poplar (*Populus balsamifera* L.; Salicaceae), White Spruce (*Picea glauca* (Moench) Voss; Pinaceae), Black Spruce, and Jack Pine, with smaller proportions of Paper Birch (*Betula papyrifera* Marsh.; Betulaceae), Balsam Fir (*Abies balsamea* (L.) Mill.; Pinaceae), and Tamarack (*Larix laricina* (Du Roi) K. Koch; Pinaceae). One or two tree species usually dominate each site, depending on habitat and successional stage. Succession in the forest is driven by forest fire; stands generally develop from deciduous-dominated to mixedwood to conifer-dominated over time, with the successional trajectory being reset at any time by the next large fire. The proportion of various stand ages thus depends on the frequency of forest fires, which is in turn driven by climate and fuel conditions in the stand.

Understorey plants in the boreal forest are particularly diverse and include such characteristic species as Beaked Hazel (*Corylus cornuta* Marsh.; Betulaceae), Mooseberry (*Viburnum edule* (Michx.) Raf.; Caprifoliaceae), Prickly Rose (*Rosa acicularis* Lindl.; Rosaceae), and Red-osier Dogwood (*Cornus stolonifera* Michx.; Cornaceae). Several distinct wetland types are also found here, ranging from nutrient-poor acidic bogs dominated by Black Spruce, Labrador Tea, and peat moss (*Sphagnum* spp.; Sphagnaceae) to fens and marshes. Although the terminology applied to different wetland types has varied from source to source in the past, the plant (and Lepidoptera) communities of various wetland types are distinctive. Johnson et al. (1995, page 15) provide a good introductory overview of wetland classification.

Lepidoptera that feed on trees and shrubs in the Boreal Forest Natural Region have been fairly well surveyed over the past 70 years by the Forest Insect and Disease Survey of the Canadian Forest Service. However, species that feed on other plants have not been thoroughly surveyed. Several sites within this region have been relatively well surveyed for Lepidoptera, including the Redwater Natural Area (Kondla 1985, 1992), Holmes Crossing Sandhills Ecological Reserve (Macaulay 2006), Richardson River Dunes Wildland Park (Schmidt and Pohl 2000), several aspen–mixedwood sites in east–central Alberta (Schmidt 2001; Morneau 2002; Pohl et al. 2004a, 2004b), Bistcho Lake (Thormin 1988), the Birch Mountains (Macaulay

and Pohl 2005), Wagner Natural Area (Schmidt, manuscript in preparation), Zama Lake (Volney et al. 1998), and Moose Lake Provincial Park (Christensen 2006). Bird et al. (1982) provided an overview of butterflies in the northeastern boreal forest. The varied habitats in Alberta's vast boreal forests continue to yield moth species new to Alberta. Despite the large proportion and diversity of wetlands in this region, they have been only poorly sampled. Several peatland-specialist species have been added to the provincial fauna recently, including *Aspitates taylori*, *Hemipachnobia monochromatea*, *Trichordestra rugosa*, and *Sympistis heliophila*. The diverse mixedwood forests of lower-lying areas in the eastern parts of the province have also yielded recent additions to the Alberta fauna (*Lethe anthedon*, *Pangrapta decoralis*); further surveying of these rich, mesic forests should yield additional species new to the province.

Although Lepidoptera assemblages of the Boreal Forest Natural Region exhibit variation at fine geographic scales, they are rather homogeneous at a broad scale; most boreal species occur within their particular microhabitats across the boreal plain from the Atlantic provinces to northeastern British Columbia. The Subarctic Subregion, represented by the Caribou Mountains, has a relatively depauperate Lepidoptera fauna (Schmidt et al. 2004), but it includes species typical of the Rocky Mountain Region (e.g., *Sympistis heliophila*, *Pararctia yarrowii, Gynaephora rossii*).

### Foothills Natural Region

The Foothills Natural Region represents a transition zone between the Boreal Forest and Rocky Mountain natural regions. As such, few Lepidoptera species are restricted to this ecoregion; conversely, since boreal and cordilleran plant species may co-occur in this region, it has a relatively rich lepidopteran fauna. For example, the area between Rocky Mountain House and Drayton Valley exhibits one of the highest tree species compositions in the province, and butterflies there include both boreal and cordilleran species (Pinel 1985). This region is particularly suitable for studies on the speciation and hybridization of closely related species, as boreal–cordilleran sister species can interact here (Sperling and Harrison 1994; Sperling and Hickey 1995).

The region is divided into the Upper and Lower Foothills subregions, defined in large part by the presence of Lodgepole Pine (*Pinus contorta* Dougl. ex Loud.; Pinaceae) in the Lower Foothills Subregion (replacing Jack Pine of the Boreal Forest Natural Region), and the dominance of conifers (to the exclusion of deciduous trees) in the Upper Foothills Subregion. Here, Subalpine Fir (*Abies lasiocarpa* (Hook.) Nutt.; Pinaceae) replaces Balsam Fir. Overall, the Foothills Natural Region experiences cool, wet summers but milder winters than the Boreal Forest Natural Region (Kershaw et al. 2001).

To date, the most intensive surveys of foothills habitat have been carried out by Alberta's early lepidopterists, F. H. Wolley Dod and K. Bowman. Both Wolley Dod's and

Bowman's material, from the foothills near Calgary and Nordegg, respectively, resulted in the description of numerous new taxa. Aside from the southernmost portion of the Foothills Natural Region, represented by Wolley Dod's and Bowman's early efforts, the region's moth fauna remains very poorly surveyed, the butterflies less so. Macaulay and Dunne (2001) provided a preliminary list for the Hinton area. To date, there have been no comprehensive faunal treatments for the Saddle Hills, Pelican Mountains, or Swan Hills. Pinel (1985) documented the butterfly fauna of Crimson Lake.

### Rocky Mountain Natural Region

The physiographic and floristic diversity of this region make it very rich in terms of Lepidoptera. A large number of species are found nowhere else in the province, and a few of Alberta's mountain species are not known elsewhere in Canada or even the world. The Alberta Rockies include several historical collecting localities, from which numerous new species were described. Chief among these were Nordegg (collections by Bowman), Lake Louise (historically known as Laggan; Wolley Dod), Banff (Sanson), Waterton Lakes (Braun and McDunnough), and Moraine Lake near Lake Louise (Braun and McDunnough). These sites continue to yield new species and new Alberta records.

The Rocky Mountain Natural Region is a complex composite of many plant communities; for an excellent introductory overview of many of these, see Gadd (1995). The region is subdivided into three subregions, which roughly correspond to altitudinal zonation: Montane (at the lowest elevations in the major river valleys and southernmost front ranges), Subalpine, and Alpine (above treeline). The Montane Subregion is characterized by a patchwork of grasslands and open forests of Lodgepole Pine and Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco; Pinaceae), with localized stands of Limber Pine (*Pinus flexilis* James; Pinaceae) on rock outcrops and Trembling Aspen and White Spruce on more mesic sites. Typical understorey plants include Common Bearberry, junipers (*Juniperus* spp.; Cupressaceae), and grasses such as reed grass (*Calamagrostis* spp.; Poaceae), fescue (*Festuca* spp.; Poaceae) and Hairy Wild Rye (*Elymus innovatus* Beal; Poaceae). A large number of these plant species occur in Alberta only from the Crowsnest Pass southward (especially in the area of Waterton Lakes National Park), a pattern also seen in the Lepidoptera. A few of the lepidopteran species found only in the southwest Montane Subregion include several Prodoxidae and Adelidae species, *Ellabella editha*, *Satyrium semiluna*, *Hemileuca eglanterina*, *Sympistis extremis*, *Hydroeciodes serrata*, and *Setagrotis vocalis*. Many more undoubtedly await discovery. The bulk of knowledge about the southern montane moth fauna comes from just a few sources, chief among them being Bowman's collections from the Hillcrest (Crowsnest Pass) area and the material collected by J. H. McDunnough over a few seasons at Waterton Lakes. As well, recent survey work carried out at Waterton Lakes National Park through the Biological Survey of Canada, begun in 2005, is yielding a large number of new provincial species records (Anweiler 2006a; Schmidt 2007). The least-known montane areas are those north of the Bow River Valley, i.e., the upper Red Deer, North

Saskatchewan, Athabasca, and Smoky River valleys and the Cypress Hills in the southeast corner of the province. Preliminary moth surveys have been carried out in montane habitats of the Jasper Lake and Kootenay Plains areas (Schmidt 2007). Several accounts of the rich montane butterfly fauna have been published, focusing on Bow Valley Provincial Park (Pinel 1988), Kootenay Plains Natural Area (Kondla 1986a), Indian Graves Provincial Recreation Area (Pinel 1983), and Fish Butte (Sperling 1993a). One gelechiid species, *Coleotechnites biopes*, is thought to be endemic to the Cypress Hills (Freeman 1960).

The Subalpine Subregion is cooler and moister than the Montane Subregion and is dominated by conifers such as Lodgepole Pine, Engelmann Spruce (*Picea engelmannii* Parry ex Engelm.; Pinaceae), and Subalpine Fir. The lower Subalpine Subregion generally exhibits closed-canopy forests. At higher elevations, this zone blends into the Alpine Subregion, and the blended area is often characterized by open forest and lush meadows. These meadows are often rich in herbaceous plants, and support many species of Lepidoptera. Characteristic Lepidoptera of this subregion include a number of *Syngrapha*, *Lasionycta*, and *Dysstroma* species, *Colias elis*, and *Lycaena phlaeas arethusa*, among others. The Alpine Subregion occurs above about 2100 m, depending on moisture regimes, exposure, slope, and latitude. The topography, rock substrate, moisture, slope, and exposure all work together to form a diverse and complex array of habitats there, and alpine habitats tend to be rich in butterflies and diurnal moths. Dry tundra, boggy tundra, rocky scree slopes, and boulder fields are just some examples of the habitats that are host to unique lepidopteran assemblages. Many species are found only in alpine habitats in Alberta, such as some *Lasionycta* and *Entephria* species, *Syngrapha parilis*, *Boloria alberta*, *Colias nastes*, and *Erebia magdalena*. Although alpine and subalpine habitats are diverse, there are few faunal accounts of specific areas; nonetheless, local inventories of butterflies have been published for Plateau Mountain (Bird 1975; Pinel and Kondla 1995) and Kananaskis Provincial Park (Kondla and Bird 1979). Pike (1980) discussed the postglacial origins of Alberta's tundra butterflies.

Although the mountains from about the Bow River Valley southward have been sampled relatively well for butterflies, large gaps in the knowledge of the mountain fauna still exist, particularly for moths. The mountain ranges north and west of Nordegg, including Jasper National Park and Willmore Wilderness Park, are particularly poorly known, largely as a result of their inaccessibility. Willmore Wilderness Park was surveyed in 2007, and a report was prepared by Macaulay (2008). As well, Kakwa Wildland Park was surveyed for Lepidoptera in 2006, and a report is currently in progress (Lawrie et al., manuscript in preparation).

### Parkland Natural Region

Like the Foothills Natural Region, the Parkland Natural Region is a transition zone, in this case between the Boreal Forest and Grassland natural regions. Typical parkland

consists of a mosaic of Trembling Aspen stands and fescue grasslands. Prevalent plants include many of those also found in the Boreal Forest and Grassland natural regions; shrub communities can be important components here, particularly Choke Cherry (*Prunus virginiana* L. Rosaceae), Silverberry (*Elaeagnus commutata* Bernh.; Elaeagnaceae), and Buckbrush (*Symphoricarpos occidentalis* Hook.; Caprifoliaceae). Very little of the Parkland Region remains in its natural state, since this region has rich soils and a moisture regime favorable for agriculture. Although relatively few species are restricted to the parkland (but see exceptions below), the fauna is particularly rich because of the influence of both boreal and grassland elements.

The Parkland Natural Region is subdivided into the Central Parkland, Foothills Parkland, and Peace River Parkland subregions. The Central Parkland and Foothills Parkland subregions are the best-known areas in the province in terms of Lepidoptera, with a long history of lepidopterists who resided near the major populated areas; chief among the historical collectors were K. Bowman, F. H. Wolley Dod, D. Mackie, and P. Bruggeman, who undertook their pioneering efforts in the Edmonton, Red Deer, Calgary, and Lloydminster regions. Recent surveys by C. D. Bird have added considerably to knowledge of the Lepidoptera of the Central Parkland Subregion. Bird has surveyed and reported on the Lepidoptera of Big Knife Provincial Park (Bird 2006a), Buffalo Lake Provincial Recreation Area (Bird 2006b), Dry Island Buffalo Jump Provincial Park (Bird 2006c), East Arrowwood Coulee (Bird 2006d), J. J. Collett Natural Area (Bird 2006e), Lowden Springs (Bird 2006f), McKenzie Crossing (Bird 2006g), and Rochon Sands Provincial Park (Bird 2006h). Anweiler (2006b) also included the southern parkland areas of Dry Island Buffalo Jump Provincial Park, Tolman Bridge, and the Wainwright Dunes Ecological Reserve in his survey of grasslands areas. Macaulay (2004) also surveyed the Wainwright Dunes Ecological Reserve. The same author (Macaulay 2007) prepared a report on the Lepidoptera of the disjunct Peace River Parkland Subregion. Published local butterfly inventories include those for a disjunct aspen parkland (Kondla 1981a) and for Beaverhill Lake (Thormin 1977; Flockhart 2002).

Several species of provincial and/or national significance occur in the Parkland Natural Region, such as *Hemileuca nevadensis*, *Copablepharon grandis*, *Phaeoura quernaria*, and *Euphyes vestris*. The sand dune complexes in the Wainwright, Edgerton, and Dillberry Lake regions harbor many of these noteworthy species. Other species found only in the parkland (to date) include *Ypsolopha dentella*, *Macaria notata*, *Sphinx drupiferarum*, *Cerura scitiscripta,* and *Schizura ipomoeae*.

The Peace River Parkland Subregion is noteworthy for a number of grassland lepidopteran species disjunct from the nearest populations to the southeast, often separated by a distance of 400 km or more. Many of the disjunct butterflies represent distinct subspecies (Bird et al. 1995), and for this reason, as well as the fact that less than 1% of the grasslands remains in a natural state, Peace River Parkland butterflies are of conservation interest (Hervieux 2002). A regional summary of the butterflies was compiled by Kondla et al. (1994). As would be expected, a number of disjunct moth species also occur here, but much additional surveying is needed.

## Grassland Natural Region

Centered on the southeastern portion of the province, the Grassland Natural Region is the driest and warmest region. It is subdivided into four subregions, the Dry Mixedgrass, Foothills Fescue, Northern Fescue, and Mixedgrass subregions. The Dry Mixedgrass Subregion is the most extensive and the driest. Both the Dry Mixedgrass and the Mixedgrass subregions have short and midheight grasses as dominant communities, including needle grass (*Stipa* spp.; Poaceae), June Grass (*Koeleria macrantha* (Ledeb.) J.A. Schultes f.; Poaceae), and Blue Gramma (*Bouteloua gracilis* (HBK) Lag.; Poaceae). Shrub communities (often on sandy soil) include Prickly Rose, Silverberry, Buckbrush, and Sagebrush (*Artemisia cana* Pursh; Compositae). Riparian woodlands consist primarily of cottonwoods (*Populus* spp.; Salicaceae) but also include the westernmost stand of native Manitoba Maple (*Acer negundo* L.; Aceraceae), located on the South Saskatchewan River. Riparian stands often have a diverse shrub understorey, and this community type is generally also diverse in Lepidoptera. Prairie grasslands are particularly rich in noctuine moths, much less so for geometrids. Many species occur nowhere else in Canada, including *Tegeticula yuccasella* and other yucca obligates, *Protogygia alberta*, *Lacinipolia naevia*, several *Euxoa* species, *Pyrgus scriptura*, and *Limenitis weidemeyerii*. Many of these species occur only in the Milk River valley and associated tributaries, part of the Missouri River system. For an overview of the butterflies of the Milk River Valley, see Smith and Bird (1977), Thormin et al. (1980), and Pinel and Kondla (1985). The valley slopes and badlands of the Milk, South Saskatchewan, and Red Deer River valleys are particularly diverse Lepidoptera habitats, as a result of the topographic relief provided by steep and often eroding valley slopes. The diverse species assemblages found along the lower South Saskatchewan and Red Deer River valleys and associated coulees are one of the most important remnants of this fauna in Canada; the valley badlands span four subregions (Central Parkland, Northern Fescue, Mixedgrass, and Dry Mixedgrass), and as such provide not only enormous microhabitat diversity, but also a relatively intact dispersal corridor. Lepidoptera faunal inventories in the Red Deer River Valley have been initiated at Dry Island Buffalo Jump Provincial Park (Bird 2006c) and Dinosaur Provincial Park (Anweiler 2002, 2006b); Bird and Kondla (1974) and Kondla (1983) catalogued the butterflies of the latter. Recent survey work by Anweiler (2006b) involved sampling moths at several sites, including the lower reaches of the Red Deer, South Saskatchewan, Oldman, and Milk rivers and the Pakowki Dunes. Sand dunes in the Grassland Natural Region also have many provincially and nationally significant species, such as *Agrotis daedalus*, *Pseudacontia crustaria*, *Schinia avemensis*, and several *Copablepharon* and *Euxoa* species.

The Northern Fescue Subregion, bordering the Parkland Natural Region, is slightly cooler and moister than the Mixedgrass Subregion, and Plains Rough Fescue (*Festuca scabrella* Torr.; Poaceae) is the dominant grass. The Foothills Fescue Subregion exhibits a more diverse herb composition, and species not found in the Northern Fescue Subregion include Sticky Purple Geranium (*Geranium viscosissimum* Fisch. and Mey.; Geraniaceae) and Silky Perennial Lupine (*Lupinus sericeus* Pursh; Fabaceae). The Mixedgrass,

Northern Fescue, and Foothills Fescue subregions have been moderately well surveyed, with much historical material coming from the Calgary area (F. H. Wolley Dod) and to a lesser extent from Lethbridge (K. Bowman and E. H. Strickland). The Dry Mixedgrass Subregion has been surveyed at a number of sites, primarily in the past decade, resulting in many additions to the provincial fauna. Although there is now a good basic knowledge of the grasslands fauna, more species will certainly be discovered.

Although significant portions of the Grassland Natural Region have been cultivated in the past century, 43% still remains in an untilled state, most of which is in the Dry Mixedgrass Subregion (Alberta Prairie Conservation Forum 2008). The most pristine sites are small patches of grassland along major rivers, large tracts of land in the Suffield National Wildlife Area, and in the Pinhorn Grazing Reserve.

## History of Lepidoptera Research in Alberta

The first documented specimens of Lepidoptera collected in what is now Alberta were butterflies collected from the Jasper area by Edward Burke in 1844. Six of his specimens ended up as type specimens for species that were later described by Edward Doubleday. In 1883, J. Gamble Geddes published the first Alberta Lepidoptera list (Geddes 1883), a list of the butterflies he had collected that year while traveling through Alberta (then part of the Northwest Territories). He returned the next year and published two papers with additional information (Geddes 1884a, 1884b). Several other travelers are known to have collected Lepidoptera specimens in the late 1800s; see Bird et al. (1995) for a more complete history. Thomas E. Bean (1844–1931), a telegrapher with the Canadian Pacific Railway, was probably the first resident lepidopterist in Alberta. He lived at Laggan (now Lake Louise) for several years.

The first major resident lepidopterist in Alberta was Frederick H. Wolley Dod (1871–1919), an independently wealthy Englishman who immigrated to the Calgary area in 1893. (He wrote his name as "Wolley Dod" but both he and the Zoological Record specifically used only "Dod" for authorship of the species he described (Layberry et al. 1998). His descendants use the hyphenated form "Wolley-Dod." He is variously cited as "Dod", "Wolley Dod", and "Wolley-Dod". In the current publication, we refer to him as "Wolley Dod", but cite his work under the name "Dod".) Wolley Dod was a bona fide amateur, largely self-trained and self-motivated in entomology. He brought with him to Alberta a collection of British butterflies and moths but quickly turned his attention to the native fauna. He lived for two years on his brother's homestead at the head of Fish Creek, southwest of Calgary, before setting up his own homestead nearby at the head of Pine Creek. He collected extensively around his home and published a checklist of the macrolepidoptera of Alberta as a series of papers in *The Canadian Entomologist* between 1901 and 1906 (Dod 1901a, 1901b, 1904, 1905a, 1905b, 1905c, 1905d, 1905e, 1905f, 1906a, 1906b, 1906c), followed by further notes and updates (Dod 1908, 1912, 1914, 1915a, 1915b, 1915c); for a complete bibliography, see Harper (1979). He was acquainted with several other local collectors and was a founding

member of the short-lived North-West Entomological Society; founded in Lacombe in 1898, this organization eventually evolved into the Red Deer River Naturalists. In 1912 Wolley Dod hired a personal entomological assistant, W. H. T. Tams. In 1917, Tams went on to become curator of Lepidoptera at the British Museum, and Wolley Dod joined the army. He fought in World War I and died of dysentery in Macedonia in 1919.

Wolley Dod's original checklist, published between 1901 and 1906, included 94 butterfly species, 512 macromoth species, and seven of the larger micromoth species. With the subsequent updates published between 1908 and 1915, these numbers grew to 108 butterflies, 577 macromoths, and 9 micromoths. In all he collected about 65 new species of Lepidoptera, five of which he described himself. Most of his collection was deposited in the Canadian National Collection of Insects, Arachnids and Nematodes (CNC) in Ottawa; some has since been repatriated to the E. H. Strickland Entomological Museum (UASM) at the University of Alberta in Edmonton.

The second major resident lepidopterist in Alberta was Kenneth Bowman (1875–1955), a chartered accountant who lived in Edmonton and collected throughout the province. His granddaughter Leslie Hendra has published a scientific biography of him (Hendra 2005) and has also written an additional article containing details of a more personal nature about his life (Hendra 2007). Bowman was born in England and learned about Lepidoptera while collecting there with his grandfather at the age of six years. He came to Alberta in 1904 and ranched briefly near Red Deer before settling in Edmonton in 1906. Bowman collected Lepidoptera specimens in Alberta from the time of his arrival in the province until shortly before his death 50 years later. He collected extensively at his home on a wooded ravine in Edmonton, as well as in other places around Alberta. As an accountant, he had a circuit of companies that he visited regularly to do bookkeeping, traveling every year to Crowsnest Pass, Nordegg, and Jasper in this capacity. He collected extensively at these locations, and an itinerary of his travels and interests can be reassembled from the label information on his specimens in the UASM. Initially, he focused on butterflies, but by about 1920 his attention had turned to the macromoths, and later (about 1925) he began collecting micromoths as well. He published an update to Wolley Dod's checklist (Bowman 1919) and further updates over the next 25 years. These dealt with butterflies, macromoths, and only the largest micromoths. However, he amassed a large collection of micromoths over many years, sending them off to specialists for identification. In 1951 he compiled all of this information in a comprehensive checklist of Alberta Lepidoptera (Bowman 1951). It contained 145 butterfly species, 880 macromoth species, and 645 micromoth species. He also listed adult flight times and reported species' presence in 21 geographic regions. His was among the most comprehensive regional North American checklists of the time. Bowman was a keen collector and compiler but was not particularly interested in describing new species, and he described only one species himself. After Bowman's death in 1955, his widow sold his collection to the University of Alberta, where it resides today in the UASM. Other Bowman specimens remain in the collections of the specialists to whom he sent material, particularly those of J. H. McDunnough at the CNC and possibly A. F. Braun at the Cincinnati Museum of Natural History in Cincinnati, Ohio.

The first professional entomologist in Alberta was Edgar H. Strickland (1889–1962), who came to the Agriculture Canada Research Station in Lethbridge in 1912. He was originally hired to deal with an outbreak of Pale Western Cutworm (*Agrotis orthogonia*) and went on to deal with various other agricultural insect problems before becoming the founding professor of the Department of Entomology at the University of Alberta in Edmonton in 1922. Later researchers at the Agriculture Canada Research Station in Lethbridge included J. R. Byers, N. D. Holmes, L. A. Jacobson, and D. L. Struble. These individuals have all made significant contributions to the understanding of cutworm pests of agricultural crops.

The first Canadian Forest Service (CFS) laboratory in Alberta opened in Calgary in 1948. The primary lepidopterist was W. Clayton McGuffin (1913–1999), who worked there from the time the laboratory opened until 1962. He then moved to Ottawa to work in the CNC. He published many papers on Lepidoptera larvae and adults, particularly in the family Geometridae. While in Calgary, McGuffin was head of the Forest Insect and Disease Survey (FIDS), a CFS project that had several forest rangers collecting and rearing forest insects all over the province for many years. This work resulted in many host records and generated thousands of specimens, which are deposited in the CFS collection (now in Edmonton) and the CNC. The FIDS program was most active from 1950 to 1970, but it continued at a smaller scale until 1992. Other federal forest entomologists stationed at the Calgary laboratory included R. W. Stark, who studied conifer needleminers there from 1948 to 1959, and R. F. Shepherd, who studied defoliator population dynamics there from 1952 to 1969 (Cerezke 2003). The Calgary laboratory closed in 1970, when the current CFS facility opened in Edmonton. W. G. H. Ives and H. R. Wong carried out some Lepidoptera research in Edmonton in the 1970s and 1980s, and at the time of writing, W. J. A. Volney and GRP were active there.

Since about 1990 there has been a resurgence in taxonomic and faunistics work on the Alberta Lepidoptera. Between about 1987 and his retirement due to failing health in 2004, Ernest Mengersen (1945-2009), an entomology instructor at Olds College, amassed a large collection of Lepidoptera specimens. In 1993, Edmonton naturalist John Acorn published *Butterflies of Alberta* (Acorn 1993), the first in his excellent series of field guides for observing and identifying living insects. In 1995, Charles Bird, Gerald Hilchie, Norbert Kondla, Ted Pike, and Felix Sperling published *Alberta Butterflies* (Bird et al. 1995), a comprehensive guide that was begun in the 1960s by Bird and his colleague John Legge. It treated 177 species in detail (including 16 species not confirmed for the province at that time) and included sections on history, biology, and collecting. Beginning in the early 1990s, CFS researchers and University of Alberta faculty and graduate students have carried out several forest biodiversity projects examining Lepidoptera (Volney et al. 1998; Morneau 2002; Pohl et al. 2004a, 2004b; Schmidt and Roland 2006).

In the late 1990s, a number of amateur and professional entomologists with an interest in Lepidoptera began holding informal gatherings, which eventually culminated in the formation of the Alberta Lepidopterists' Guild (ALG) in 1999. Thus began the modern era of Lepidoptera research in Alberta. Also in 1999, Felix Sper-

ling was hired as a systematist at the University of Alberta. As curator of the UASM, he has undertaken to reorganize and create a database for the Bowman collection; he has also created a virtual museum on the World Wide Web (available on-line at http://www.entomology.ualberta.ca/), featuring species pages for many of the macrolepidoptera of Alberta (Sperling et al. 2003). In 2006, the UASM was the recipient of a donation of the personal collection of James Troubridge, which contains representatives of almost every species of noctuoid moth known in western Canada. Many students and volunteers have worked at the Sperling laboratory over the past decade, including GGA (a volunteer) and BCS (graduated with a Ph.D in 2007). Other scientists at the University of Alberta who work regularly on Lepidoptera, or supervise students who do so, include Maya Evenden, Andrew Keddie, Jens Roland and John Spence.

In recent years, ALG members have been aided in their collection work by modern sampling and trapping techniques, as well as much better road access to remote parts of the province than their predecessors had. Significant contributions to the knowledge of Lepidoptera diversity in Alberta have been made recently by ALG members Charles Bird, Bruce Christensen, Jason Dombroskie, Gerald Hilchie, David Lawrie, Doug Macaulay, Ted Pike, Janet Scott, and the authors of this book, among others. The UASM continues to be the main depository for such specimens and data. In recent years, ALG members have also been submitting specimens to the All Leps Barcode of Life project (available on-line at http://www.lepbarcoding.org/; Biodiversity Institute of Ontario 2006), as a contribution to an ambitious effort to sample the DNA of all the Lepidoptera species occurring in North America.

## Current State of Knowledge of Lepidoptera in Alberta

The numbers of species known to occur in Alberta has increased dramatically over the past century (Table 2). Butterflies occurring in Alberta have been more thoroughly documented, although new species continue to be found, with 16 species added in the past decade. In recent years, about 20 moth species have been discovered annually in Alberta. Many specimens in various collections remain unidentified, particularly among the micromoths, for which many of the specimens represent undescribed species.

The macromoth fauna of the Boreal Forest, Parkland, and Grassland natural regions are fairly well known, whereas that of the Rocky Mountain Natural Region remains the most poorly known. Micromoths are reasonably well known for the Boreal Forest and Parkland natural regions, less well known in the Grassland Natural Region, and very poorly known in the Rocky Mountains Natural Region. The most poorly known groups are the micromoths of the superfamily Gelechioidea.

Although the Canadian Shield Natural Region is the most poorly surveyed region, the species occurring there are primarily those of the much better-known fauna of the Boreal Forest Natural Region. Overall, the Lepidoptera fauna of the Rocky Mountains is the most poorly known.

**Table 2.** Numbers of species in historical[1] and current[2] lists of Alberta Lepidoptera

| Lepidoptera group | Dod (1901–1915)[3] | Bowman (1951) | Bird et al. (1995) | Current |
|---|---|---|---|---|
| **Micromoths** | | | | |
| Gelechiidae | – | 53 | – | 121 |
| Tortricidae | – | 274 | – | 382 |
| Pyralidae and Crambidae | – | 149 | – | 208 |
| Other groups | 9 | 169 | – | 344 |
| **Subtotal (micromoths)** | **9** | **645** | – | **1055** |
| **Butterflies** | **108** | **145** | **161** | **175** |
| **Macromoths** | | | | |
| Geometridae | 109 | 237 | – | 293 |
| Noctuidae (*sensu lato*)[4] | 430 | 583 | – | 772 |
| Other groups | 38 | 60 | – | 72 |
| **Subtotal (macromoths)** | **577** | **880** | – | **1137** |
| Overall total | 694 | 1670 | – | 2367 |

[1]Numbers of species from the historical lists published by Wolley Dod, Bowman, and Bird following the species-level nomenclature of their respective times. However, the taxa are presented in this table following current higher-level arrangements.

[2]Numbers of species from the current publication do not include subspecies or species whose occurrence in Alberta is considered probable.

[3]Original list (Dod 1901a, 1901b, 1904, 1905a, 1905b, 1905c, 1905d, 1905e, 1905f, 1906a, 1906b, 1906c) and species added in several updates (Dod 1908, 1914, 1915a, 1915b, 1915c).

[4]Includes Erebidae, Euteliidae and Nolidae.

The Edmonton area (including nearby Wagner Fen, Ministik Bird Sanctuary, the Redwater area and Strathcona County) is the only particularly well surveyed area in Alberta, but new species continue to be discovered there, because of the intensity of collecting.

## Resources for Lepidopterists

### Lepidoptera Collections in Alberta

At the time of writing, the main public Lepidoptera collections in Alberta were the E. H. Strickland Entomological Museum at the University of Alberta (UASM), the Northern Forestry Centre Research Collection of the Canadian Forest Service in Edmonton (NFRC), and the Olds College Collection (OLDS). The UASM (Felix Sperling, curator) holds approximately 110 000 Lepidoptera specimens, about half of which are from Alberta. The current list records approximately 1800 Alberta species records from the UASM. About one-third of the collection is made up of the historical Bowman collection, and another third consists of the recently donated Troubridge collection of noctuoids. The NFRC (GRP, curator) contains approximately 35 000 Lepidoptera

specimens from the Prairie provinces, about half of which are from Alberta. About 30% of these are reared voucher specimens from the Forest Insect and Disease Survey; most of the rest are from recent biodiversity and inventory work in the forested regions of Alberta. The collection houses approximately 1200 Alberta species records. The OLDS collection (Kenneth Fry, curator) contains approximately 15 000 Lepidoptera specimens, primarily from southwestern Alberta. The current list records approximately 800 species records from the OLDS collection. In addition to these three collections, the Royal Alberta Museum (PMAE) holds approximately 30 000 Lepidoptera specimens, most of which represent exotic species. Nonetheless, the PMAE houses a considerable collection of Alberta butterflies, including a fine display in the public gallery. Most of the Alberta specimens in the PMAE originate from the donated collections of R. L. Anderson, A. W. Rupp, and R. Scholdra. It contains approximately 460 Alberta species records. Smaller Lepidoptera collections are housed at the Agriculture and Agri-Food Canada facilities in Lethbridge and at the University of Calgary. The collection once housed at the Alberta Research Council in Vegreville was recently donated to OLDS.

## Identification Tools

Good general guides to the major groups of Lepidoptera have been prepared by Borror et al. (1981), Arnett (1993), Scoble (1995), Heppner (1998), Kristensen (1999), and Marshall (2006). Stehr (1987) developed a key to the larvae of world families of Lepidoptera and presented family-level descriptions and information. Robinson et al. (2002) published a list of known host plants of North American Lepidoptera species, which is searchable by insect and by host. Alberta butterflies were covered thoroughly by Bird et al. (1995); the guidebook by Acorn (1993) covers most species in a more portable format. The guides by Guppy and Shepard (2001) and Layberry et al. (1998) are also very useful. For identification of moth species occurring in Alberta, the following general works can be useful. A series entitled *The Moths of America North of Mexico* currently consists of a checklist (Hodges et al. 1983) and 25 published fascicles covering many species in detail; it is planned to eventually cover all species in Canada and the United States. The fascicles published thus far are cited under the pertinent sections of the present checklist. The work by Holland (1903) is largely out of date but includes some species not dealt with more recently elsewhere. The Rocky Mountain and Foothills natural regions of Western Alberta are included in the area treated by Powell and Opler (2009), although the emphasis therein is on California. The European micromoth books by Křenek (2000) and Parenti (2000) are useful as well; their excellent photographs allow family- and sometimes genus-level identification of the often-bewildering diversity of North American micromoths.

Regional works of adjacent areas can be helpful in investigating suspected new records for Alberta. Hooper's 18-part series (1987, 1988a, 1988b, 1988c, 1990a, 1990b, 1990c, 1991a, 1991b, 1992, 1993, 1994, 1996a, 1996b, 2006a, 2006b, 2006c, 2007) lists the macromoths of Saskatchewan. Cannings and Scudder (2007)

recently published a preliminary list of the Lepidoptera of British Columbia. Kohler (1980) listed the butterflies and Cook (1930) the Noctuidae of Montana. Although Forbes (1923, 1948, 1954, 1960) is ostensibly restricted to "New York and neighboring states," these works cover many species occurring in Alberta and have plenty of useful information that cannot be found elsewhere. Covell's (1984) guide to eastern North American moths also includes many species occurring in Alberta; in particular, many species figured there are not illustrated elsewhere. Handfield (1999) discussed and illustrated the macrolepidoptera of Quebec and Labrador; this work includes nearly all species inhabiting the Boreal Forest Natural Region of Alberta. Ives and Wong (1988) provided illustrations and biological information for many tree- and shrub-feeding species. The forest Lepidoptera of Canada recorded by the Forest Insect and Disease Survey of the Canadian Forest Service were summarized by McGugan (1958) and Prentice (1962, 1963, 1965). They included host plant information and range maps, although some of the specimen identifications and host associations are incorrect. The United States Department of Agriculture Forest Service has published a number of regional guides to forest Lepidoptera, featuring excellent color images of adults and larvae (Miller 1995; Wagner et al. 1997, 2001; Miller and Hammond 2000, 2003). Wagner (2005) published a superb photographic guide to caterpillars, many of which occur in Alberta and are not illustrated elsewhere. The guide by Duncan (2006) includes excellent pictures of insects that feed on conifers, including the larvae of many Lepidoptera species that occur in Alberta.

In the past few years, some extremely useful identification tools have become available through the World Wide Web. The Canadian Biodiversity Information Facility hosts a Web site entitled *The Moths of Canada* (http://www.cbif.gc.ca/spp_pages/misc_moths/phps/mothindex_e.php; CBIF 2003). Its pages feature excellent color images of all but a very few of the macromoth species known from Canada, and they can be searched alphabetically, taxonomically, or by province. As well, the University of Alberta's E. H. Strickland Entomological Museum hosts a virtual museum, a Web site with species-level information and images and a searchable database of specimen records, which has a mapping function and a phenology plotting function (http://www.entomology.ualberta.ca/; Museums and Collections Services 2001–2008; Sperling et al. 2003). New data and new species pages are continually being added to this site. Another helpful site is the All Leps Barcode of Life Web site (http://www.lepbarcoding.org/; Biodiversity Institute of Ontario 2006). This project is undertaking to sequence a standardized region of the *cytochrome oxidase* gene of mitochondrial genome, for all North American Lepidoptera species; the so-called "DNA barcode" region (Hebert et al. 2003). The Web site features a searchable database of specimen images and associated DNA barcodes. Other useful Web sites include those of the North American Moth Photographers Group (2007; http://mothphotographersgroup.msstate.edu/MainMenu.shtml) and Tortricid.net (http://www.tortricidae.com/; Gilligan 2008). Pohl (2006) has posted an electronic checklist of North American micromoths. Works dealing with the family level or lower are cited at the family level in the checklist below or in individual species entries.

Lepidopterists' Groups

The Alberta Lepidopterists' Guild is a small organization of dedicated amateurs and professionals, including the authors of this monograph. The group maintains a listserv (called ALTALEPS) for its members, and has a Web site (http://www.biology.ualberta.ca/old_site/uasm//alg/index.html; Pohl et al. 2003-2008); it is expected that updates to this publication will be made available there. The guild organizes local events and gatherings, is involved in a variety of Lepidoptera research projects, and offers small annual bursaries intended to support amateur Lepidoptera research. The Lepidopterists' Society is an international organization that publishes a journal and newsletter and hosts annual scientific meetings. More information on the Lepidopterists' Society can be found at its Web site (http://www.lepsoc.org/; Lepidopterists' Society 2008).

## Summary of Alberta's Lepidoptera Diversity

The list presented here contains 2308 Lepidoptera species known to occur (or known to have occurred in the past) in Alberta (Table 3). This number includes 13 migrants, 18 strays, and eight species found in Alberta only in association with humans. A further 59 species have been reported but not confirmed from Alberta, and 138 species are listed as probably occurring in the province. A total of 227 of the reported species (9.6% of the known and reported Alberta fauna) are thought to be Holarctic in distribution; 46 (1.9% of the Alberta fauna) are believed to have been introduced to North America, and five are thought to have been introduced to Alberta from other parts of North America. The 138 species listed as probably occurring in Alberta constitute a conservative list that includes only those species considered highly likely to be found in the province; a list of all the species that may possibly be found here would be much more extensive.

Overall, Alberta is home to approximately 17% of the known North American Lepidoptera fauna of approximately 14 000 species, and 1.3% of the known global fauna of approximately 180 000 species. The Alberta fauna is among the largest of any Canadian province. It is probably exceeded by the faunas of the more temperate and ecologically diverse provinces of British Columbia, Ontario, and Quebec. A preliminary list of the Lepidoptera of British Columbia (Cannings and Scudder 2007) listed 2284 species. However, the fauna of British Columbia has not been collected and compiled as thoroughly as has that of Alberta, and the true number of species occurring there probably exceeds the number of Alberta species. Riotte (1992) reported 1700 species from Ontario but included only a portion of the micromoths. Handfield et al. (1997) listed 2577 species from Quebec and Labrador combined. In Saskatchewan, on the eastern border of Alberta, 1823 species are known (Hooper and Pohl, unpublished data). To the north, in the Northwest Territories, 458 species are known (Pohl, unpublished data). The only other compre-

**Table 3.** Number of Lepidoptera species, by family, currently known from Alberta, unconfirmed from Alberta, and considered likely to be found in Alberta[1].

| Family or group | No. of Known species[2] | No. of unconfirmed species | Total no. of reported species | No. of probable species |
|---|---|---|---|---|
| **Micromoths** | | | | |
| Eriocraniidae | 1 | 0 | 1 | 0 |
| Acanthopteroctetidae | 1 | 0 | 1 | 1 |
| Hepialidae | 5 | 1 | 6 | 0 |
| Nepticulidae | 2 | 1 | 3 | 1 |
| Opostegidae | 1 | 0 | 1 | 0 |
| Heliozelidae | 0 | 1 | 1 | 0 |
| Adelidae | 4 | 0 | 4 | 0 |
| Prodoxidae | 14 | 2 | 16 | 0 |
| Incurvariidae | 0 | 0 | 0 | 1 |
| Tischeriidae | 1 | 0 | 1 | 0 |
| Tineidae | 19 | 0 | 19 | 1 |
| Acrolophidae | 1 | 0 | 1 | 0 |
| Psychidae | 4 | 0 | 4 | 0 |
| Douglasiidae | 3 | 1 | 4 | 0 |
| Bucculatricidae | 2 | 0 | 2 | 0 |
| Gracillariidae | 24 | 1 | 25 | 2 |
| Yponomeutidae | 13 | 1 | 14 | 2 |
| Ypsolophidae | 8 | 0 | 8 | 0 |
| Plutellidae | 7 | 0 | 7 | 0 |
| Acrolepiidae | 1 | 0 | 1 | 0 |
| Glyphipterigidae | 4 | 0 | 4 | 0 |
| Bedelliidae | 1 | 0 | 1 | 0 |
| Lyonetiidae | 2 | 0 | 2 | 1 |
| Elachistidae | 55 | 1 | 56 | 5 |
| Xyloryctidae | 6 | 0 | 6 | 1 |
| Glyphidoceridae | 1 | 0 | 1 | 0 |
| Oecophoridae | 5 | 1 | 6 | 0 |
| Batrachedridae | 1 | 0 | 1 | 0 |
| Coleophoridae | 37 | 2 | 39 | 2 |
| Autostichidae | 2 | 0 | 2 | 1 |
| Cosmopterigidae | 5 | 0 | 5 | 2 |
| Gelechiidae | 116 | 5 | 121 | 15 |
| Limacodidae | 1 | 0 | 1 | 0 |
| Sesiidae | 24 | 2 | 26 | 1 |
| Cossidae | 3 | 0 | 3 | 0 |
| Choreutidae | 9 | 0 | 9 | 0 |
| Tortricidae | 367 | 15 | 382 | 0 |
| Urodidae | 1 | 0 | 1 | 0 |
| Schreckensteiniidae | 1 | 0 | 1 | 0 |

| Family or group | No. of Known species[2] | No. of unconfirmed species | Total no. of reported species | No. of probable species |
|---|---|---|---|---|
| Epermeniidae | 5 | 0 | 5 | 1 |
| Alucitidae | 3 | 0 | 3 | 0 |
| Pterophoridae | 45 | 3 | 48 | 0 |
| Copromorphidae | 1 | 0 | 1 | 0 |
| Carposinidae | 3 | 0 | 3 | 0 |
| Pyralidae | 86 | 1 | 87 | 5 |
| Crambidae | 116 | 5 | 121 | 1 |
| Thyrididae | 1 | 0 | 1 | 0 |
| Subtotal | 1012 | 43 | 1055 | 43 |
| **Butterflies** | | | | |
| Hesperiidae | 31 (+3) | 0 | 31 (+3) | 5 |
| Papilionidae | 8 (+3) | 0 | 8 (+3) | 0 |
| Pieridae | 23 (+5) | 0 (+1) | 23 (+6) | 0 |
| Lycaenidae | 39 (+4) | 0 | 39 (+4) | 4 |
| Nymphalidae | 73 (+13) | 1 | 74 (+13) | 4 |
| Subtotal | 174 (+28) | 1 (+1) | 175 (+29) | 13 |
| **Macromoths** | | | | |
| Drepanidae | 9 | 0 | 9 | 0 |
| Uraniidae | 1 | 0 | 1 | 0 |
| Geometridae | 290 | 3 | 293 | 14 |
| Lasiocampidae | 4 | 1 | 5 | 0 |
| Saturniidae | 6 | 0 | 6 | 1 |
| Sphingidae | 26 | 1 | 27 | 3 |
| Notodontidae | 24 | 0 | 24 | 3 |
| Erebidae | 120 | 4 | 124 | 16 |
| Euteliidae | 1 | 0 | 1 | 0 |
| Nolidae | 4 | 0 | 4 | 1 |
| Noctuidae | 637 | 6 | 643 | 44 |
| Subtotal | 1122 | 15 | 1137 | 82 |
| **Total** | 2308 (+28) | 59 (+1) | 2367 (+29) | 138 |

[1]Additional butterfly subspecies counts are indicated in parentheses. [2]Includes species coded in the checklist as resident, migrant, stray, and human-associated.

hensive list from Canada is for the Yukon Territory (Lafontaine and Wood 1997), with 518 reported species.

The total number of Lepidoptera species in Alberta is thought to be considerably higher than the 2367 species reported here (Table 4). We based the estimates in the table on the assumptions that the total Alberta butterfly fauna is approximately 190 species (175 known, plus 15 more species to be discovered) and that butterflies account for 5% of the total Alberta Lepidoptera fauna. We then calculated the total numbers of species in the other two groups according to their expected proportions of the total fauna, which were based on their proportions in the much more thoroughly sampled

**Table 4.** Summary of Lepidoptera species known from and expected in Alberta

| | Reported[1] | | Expected | | | |
|---|---|---|---|---|---|---|
| **Group** | **No. of species** | **% of total** | **No. of species** | **% of total** | **Estimated no. of undiscovered species** | **% of expected species currently known** |
| Micromoths | 1055 | 44.6 | 2280 | 60 | 1225 | 46.3 |
| Butterflies | 175 | 7.4 | 190 | 5 | 15 | 92.1 |
| Macromoths | 1137 | 48.0 | 1330 | 35 | 193 | 85.5 |
| Total | 2367 | 100 | 3800 | 100 | 1433 | 62.3 |

[1]Includes unconfirmed reports.

faunas of the Ottawa region in Ontario and of Finland (Lafontaine and Wood 1997), and of northwestern Europe (Kristensen et al. 2007).

Although these numbers are somewhat speculative, it is expected that the vast majority of new records will likely come from the micromoths, for which probably less than half of all Alberta species are known at the time of writing. On the basis of their distribution in other parts of North America, we have listed a species of the micromoth family Incurvariidae as likely occurring in Alberta; the family Micropterigidae may occur in Alberta as well.

Many of the new records will come from new descriptions of previously unrecognized species. A number of undescribed species are already known to be present in Alberta, but for the most part these have been omitted from the present list. Others will be discovered as collectors survey the province more thoroughly. Areas that will likely produce many new records are the grasslands (micromoths), mountains (all moths), and wetlands in all regions (all moths).

Table 5 lists the number of Alberta species in each family by major ecoclimatic region.

**Table 5.** Number of Alberta Lepidoptera species, including unconfirmed records but not probable occurrences, by family, inhabiting each of the major ecoclimatic regions[1]

| Family or group | Mountain | Boreal | Grassland |
|---|---|---|---|
| **Micromoths** | | | |
| Eriocraniidae | 0 / 0 | 1 / 0 | 0 / 0 |
| Acanthopteroctetidae | 1 / 1 | 1 / 0 | 0 / 0 |
| Hepialidae | 2 / 3 | 4 / 1 | 1 / 1 |
| Nepticulidae | 1 / 0 | 3 / 0 | 0 / 0 |
| Opostegidae | 0 / 0 | 1 / 0 | 0 / 1 |
| Heliozelidae | 0 / 0 | 1 / 0 | 0 / 1 |
| Adelidae | 3 / 0 | 2 / 1 | 1 / 1 |
| Prodoxidae | 10 / 0 | 5 / 1 | 3 / 0 |
| Incurvariidae | 0 / 0 | 0 / 0 | 0 / 0 |
| Tischeriidae | 0 / 0 | 0 / 1 | 1 / 0 |

| Family or group | Mountain | Boreal | Grassland |
|---|---|---|---|
| Tineidae | 2 / 1 | 15 / 1 | 1 / 6 |
| Acrolophidae | 0 / 1 | 0 / 0 | 1 / 0 |
| Psychidae | 3 / 0 | 1 / 1 | 0 / 1 |
| Douglasiidae | 4 / 0 | 0 / 1 | 0 / 0 |
| Bucculatricidae | 1 / 0 | 1 / 0 | 0 / 1 |
| Gracillariidae | 2 / 3 | 23 / 2 | 0 / 18 |
| Yponomeutidae | 8 / 1 | 11 / 1 | 0 / 7 |
| Ypsolophidae | 5 / 0 | 5 / 2 | 2 / 5 |
| Plutellidae | 6 / 0 | 5 / 1 | 1 / 2 |
| Acrolepiidae | 0 / 0 | 1 / 0 | 0 / 0 |
| Glyphipterigidae | 3 / 0 | 1 / 0 | 0 / 1 |
| Bedelliidae | 0 / 0 | 0 / 1 | 0 / 1 |
| Lyonetiidae | 1 / 0 | 1 / 1 | 0 / 2 |
| Elachistidae | 24 / 8 | 27 / 8 | 13 / 20 |
| Xyloryctidae | 1 / 1 | 2 / 3 | 2 / 4 |
| Glyphidoceridae | 0 / 0 | 0 / 1 | 0 / 1 |
| Oecophoridae | 2 / 2 | 4 / 2 | 0 / 5 |
| Batrachedridae | 0 / 1 | 1 / 0 | 0 / 1 |
| Coleophoridae | 13 / 2 | 22 / 3 | 10 / 11 |
| Autostichidae | 0 / 0 | 0 / 2 | 0 / 2 |
| Cosmopterigidae | 0 / 2 | 1 / 4 | 1 / 4 |
| Gelechiidae | 53 / 8 | 40 / 28 | 40 / 39 |
| Limacodidae | 0 / 0 | 1 / 0 | 0 / 1 |
| Sesiidae | 10 / 1 | 13 / 5 | 7 / 12 |
| Cossidae | 1 / 1 | 3 / 0 | 1 / 2 |
| Choreutidae | 8 / 0 | 1 / 3 | 0 / 2 |
| Tortricidae | 178 / 30 | 196 / 72 | 95 / 133 |
| Urodidae | 0 / 0 | 1 / 0 | 0 / 0 |
| Schreckensteiniidae | 0 / 1 | 1 / 0 | 0 / 1 |
| Epermeniidae | 2 / 0 | 3 / 1 | 1 / 0 |
| Alucitidae | 0 / 2 | 3 / 0 | 0 / 3 |
| Pterophoridae | 38 / 0 | 11 / 7 | 15 / 11 |
| Copromorphidae | 1 / 0 | 0 / 0 | 0 / 0 |
| Carposinidae | 1 / 0 | 3 / 0 | 0 / 3 |
| Pyralidae | 27 / 11 | 25 / 16 | 46 / 27 |
| Crambidae | 51 / 17 | 56 / 25 | 48 / 43 |
| Thyrididae | 0 / 1 | 0 / 0 | 1 / 0 |
| Subtotal | 462 / 98 | 496 / 195 | 291 / 373 |
| **Butterflies** | | | |
| Hesperiidae | 9 / 7 | 9 / 12 | 23 / 2 |
| Papilionidae | 7 / 0 | 3 / 0 | 3 / 2 |
| Pieridae | 17 / 1 | 12 / 2 | 10 / 1 |
| Lycaenidae | 25 / 5 | 14 / 9 | 18 / 3 |
| Nymphalidae | 49 / 10 | 32 / 19 | 38 / 7 |
| Subtotal | 107 / 23 | 70 / 42 | 92 / 15 |

| Family or group | Mountain | Boreal | Grassland |
|---|---|---|---|
| **Macromoths** | | | |
| Drepanidae | 2 / 5 | 7 / 1 | 1 / 6 |
| Uraniidae | 0 / 1 | 1 / 0 | 0 / 1 |
| Geometridae | 93 / 125 | 178 / 28 | 38 / 114 |
| Lasiocampidae | 2 / 2 | 4 / 0 | 0 / 2 |
| Saturniidae | 1 / 1 | 3 / 2 | 3 / 2 |
| Sphingidae | 3 / 11 | 15 / 6 | 9 / 13 |
| Notodontidae | 9 / 8 | 20 / 3 | 4 / 11 |
| Erebidae | 28 / 15 | 62 / 8 | 19 / 35 |
| Euteliidae | 0 / 0 | 0 / 0 | 1 / 0 |
| Nolidae | 1 / 0 | 4 / 0 | 0 / 4 |
| Noctuidae | 315 / 87 | 215 / 153 | 327 / 116 |
| Subtotal | 454 / 255 | 509 / 201 | 402 / 304 |
| **Total** | 1023 / 376 | 1075 / 438 | 785 / 692 |

[1]In each cell, the number before the slash represents the primary inhabitants of the ecoclimatic region and the number after the slash represents additional species that are not primary inhabitants of that ecoclimatic region, but that may be found there as strays or in small patches of their preferred habitat within the region.

## Format of the Checklist

### Higher Taxonomy

The classification presented here follows that presented by Kristensen (1999) above the tribal level and that of Hodges et al. (1983) at the tribal level, except as follows. Classification of the Gelechiidae follows Lee et al. (2009). Tribal arrangement of the Sesiidae follows Eichlin and Duckworth (1988). Classification of the Tortricidae follows Brown (2005). Classification of the Pterophoridae follows Gielis (2003). Classification of the Crambidae follows Munroe et al. (1995). Tribal arrangement of the Thyrididae follows Whalley and Heppner (1995). Nomenclature of the butterflies follows Pelham (2008) except as noted. Although Regier et al. (2009) found conclusive molecular evidence for the butterflies being nested within the microlepidoptera, and the Pyraloidea being allied with the macrolepidoptera (among other incongruencies in the current working hypothesis of superfamilies and their relationships), these results require a re-working of the higher-level ditrysian classification, and re-interpretation of the structural morphological characters defining these evolutionary lineages; it is therefore premature to implement any changes in classification and taxon sequence implied by the findings of Regier et al. (2009) at this point. The higher classification of the Geometridae is from Young (2006) and Ferguson (2008). The higher level systematics of the Noctuoidea have undergone several recent substantial changes (e.g., Zahiri et al. in press, Lafontaine and Fibiger 2006, Fibiger and Lafontaine 2005, and Mitchell et al. 2000), with the most up-to-date arrangement for North America summarized in Lafontaine and Schmidt (in press), which we follow here. The most apparent family-level changes

since the comprehensive Noctuoidea treatment of Kitching and Rawlins (1999) are the separation of the Noctuidae (in the broad sense) into Erebidae, Euteliidae, Nolidae, and Noctuidae, with the long-accepted families Arctiidae and Lymantriidae placed as subfamilies within the Erebidae.

## Species and Subspecies Concepts

Species are the basic units of biological classification, but the idea of a "species" is a human construct. Most members of the Lepidoptera are clearly separable into species, but examples abound of complex variation and intergradation within and between populations, which presents problems for separating these organisms into artificial species categories. For practical reasons, we have had to draw lines through such gray areas, but there is not necessarily a "right" answer in such situations. For the purposes of this report, we have generally followed the "genomic integrity" definition of Sperling (2003): that species consist of populations that maintain their genomic integrity when they contact each other (despite the possibility of occasional gene exchange) or of allopatric populations that exhibit genetic divergence equivalent to that occurring in comparable sister species in sympatry or parapatry. We have done our best to apply this concept consistently, but the information available was often insufficient. We recognize that other interpretations may be equally valid, including the views of one of us (NGK), whose species hypotheses differ in some respects from those presented here. The most prominent such cases are in the butterfly genera *Incisalia*, *Plebejus*, *Agriades*, *Coenonympha*, and *Boloria*, as detailed in the "Notes" section for each of the pertinent species. For a recent discussion of species concepts, see Claridge (2009).

Avise and Ball (1990) defined subspecies as "groups of actually or potentially interbreeding populations, phylogenetically distinguishable from, but reproductively compatible with, other such groups." In practice, it can be problematic to apply subspecies names rigorously. Nevertheless, they provide a means to formally refer to finer levels of variation than the species level, and they are widely used for butterflies, so we have included them here. However, in many cases, intermediate forms may exist that are not readily assignable to a particular subspecies. Subspecies are much less commonly used for moths, and we have not listed moth subspecies in the body of the list. However, in the "Notes" section, we mention any described moth subspecies relevant to Alberta populations.

## Family-Level Introductory Paragraphs

In the introductory paragraph for each family, we provide a brief summary of the distinguishing features, general appearance, and general biological information for the group in North America. Unless otherwise indicated, our use of the term "North America" applies to the portion of the continent north of Mexico; this corresponds

roughly to the Nearctic faunistic region and pertains to the region as covered by most taxonomic works. In these introductory paragraphs, we use the following size classes (approximate): minute = less than 15 mm, small = 10–30 mm, medium-sized = 25–50 mm, large = 50–100 mm, very large = greater than 100 mm. The common names of the family and other higher-level taxonomic groups are primarily from Heppner (1998).

In these paragraphs, we also provide a brief overview of the global and North American diversity of the group and a brief summary of the state of taxonomy for the group in North America. This information has been obtained from Arnett (1993), Scoble (1995), and Kristensen (1999), as well as from family-level works cited in the individual family treatments. This information is also provided at the subfamily level for a few of the large families.

## Format of Species Entries

The species entries contain the information shown in the following example and described in detail in the following subsections.

### *Species Number*

After much debate, we decided not to use the outdated numbers of the most recent published checklist of the Lepidoptera of North America (Hodges et al. 1983). Being current to 1978, that catalog is now more than 30 years out of date, and it is currently being revised, as the higher-level taxa have been substantially rearranged and many new species and combinations have been recognized since its original publication. We have chosen instead to number the species consecutively, in taxonomic order, following the most recent accepted classification for the higher taxa and the order of species

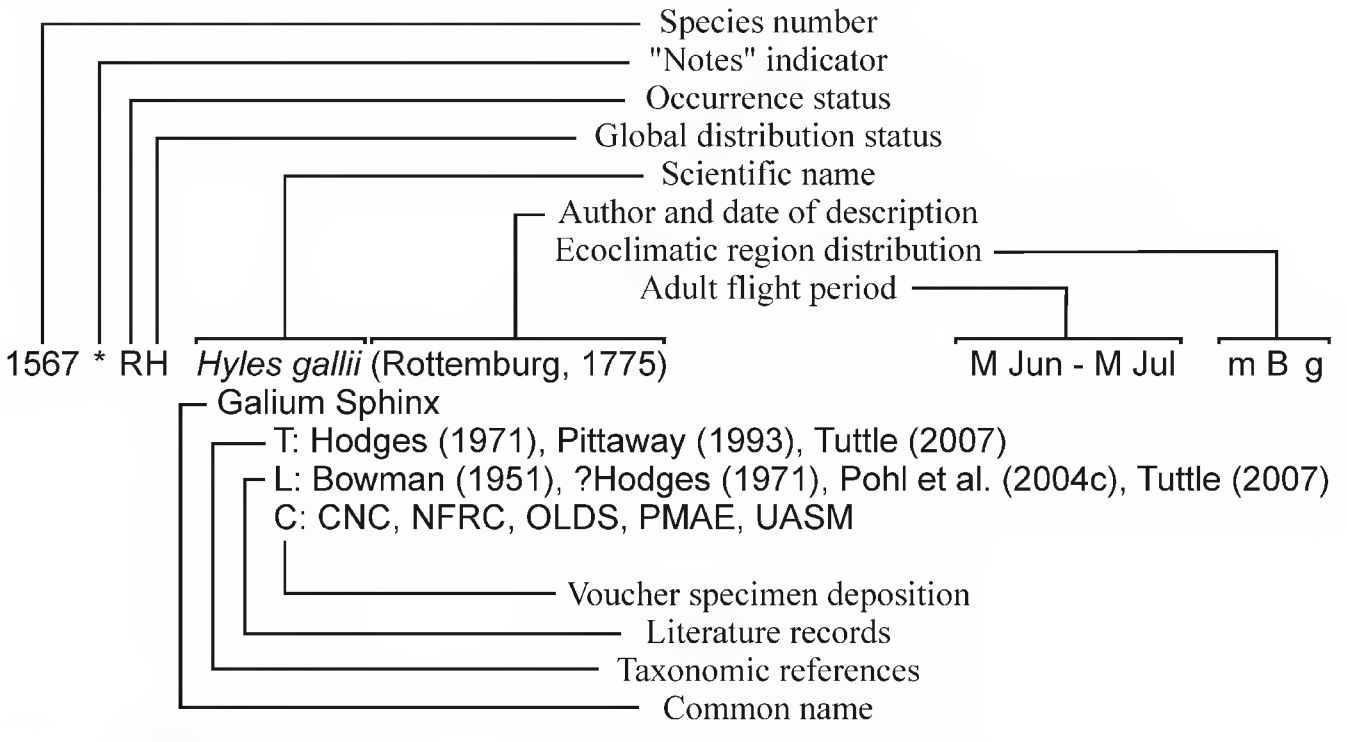


**Figure 3.** Example species entry. See text below for a full explanation.

in the most recent revision of each group. All species known to occur in Alberta, or reported but unconfirmed from Alberta, have been given a whole number. Species erroneously reported from Alberta by previous authors are not included in the main list; instead they are listed in the "Excluded Taxa" section following it. Multiple subspecies within a species have been assigned lowercase letters following the species number. Species that probably will be found in Alberta have been given numbers with a single-digit decimal and have been inserted in the correct taxonomic sequence in the list. An asterisk after a number indicates that additional details on the species can be found in the "Notes" section, which is arranged by species number.

***Occurrence Status in Alberta***

The occurrence of a species in Alberta is indicated by a letter, as follows:

R, confirmed resident – Known to reside in natural habitats in Alberta, for its entire life cycle.

S, stray – Occasionally collected in the wild in Alberta, but with no evidence of established breeding populations. This category is also used for species that have been introduced by humans (either intentionally or otherwise) but have not successfully established breeding populations, such as the Gypsy Moth (*Lymantria dispar*).

M, migrant – Regularly collected in the wild in Alberta, but the entire life cycle is not completed here. This category includes species that naturally migrate into Alberta, such as the Monarch (*Danaus plexippus*).

H, human-associated – Occurs in Alberta only indoors or in close association with humans, either as a pest or in culture. No established populations exist outside of human situations.

U, unconfirmed or uncertain – A published record that is plausible, but unconfirmed because no voucher specimens can be located. This category is used for published statements, such as "across the Prairie provinces," that clearly refer to Alberta but are not supported by specimens or more detailed range information. It is also used for specimens with questionable determinations, for which more detailed examination is required to verify their identity. For any species with this designation, details are given in the "Notes" section.

P, probable occurrence – Not reported to occur in Alberta, but highly likely to occur there, on the basis of records from adjacent areas such as the Columbia Valley in British Columbia, Glacier National Park in Montana, or boreal habitat in Saskatchewan. Such species are only listed if the known host and habitat information does not rule out its occurrence in Alberta. For any species with this designation, details are given in the "Notes" section. Probable species are presented in a smaller font in the list.

***Global and Continental Distribution***

The global and continental distribution of species is indicated by a letter, as follows

H – Species is naturally Holarctic in distribution.

h – Holarctic at the species level, but with a different subspecies occurring in North America.
I – Introduced to North America by humans
i – native North American species that has been introduced by humans to Alberta.
A question mark after the above abbreviations indicates uncertainty regarding the geographic origin of the species in question.

***Scientific Name, Author, and Date of Original Description***

The valid or accepted scientific name of each species is presented in italics, followed by the author and date of the published description (the taxonomic authority). Throughout this book, we have distinguished taxonomic authorities from literature references as follows: for a taxonomic authority, the date of description is separated from the author's name by a comma and a space; for references to the literature, the year of publication is separated from the author name by a space alone, or the year is enclosed in parentheses, if the author's name forms an integral part of the sentence structure. Parentheses (round brackets) around the author and date indicate that the species was described in a genus other than that in which it is currently placed. Square brackets around the date indicate that the description was actually published on a date different from that given in the work. Where subspecies are given for species of butterfly, as described above, the subspecific epithet is preceded by the abbreviation "ssp." and followed by the subspecies author and date of description. For valid names that differ from recent accepted usage, as in Hodges et al. (1983) for moths and in Bird et al. (1995), Layberry et al. (1998), and/or Guppy and Shepard (2001) for butterflies, a taxonomic note is provided in the "Notes" section. A number of species do not currently have valid names, primarily because they have recently been recognized as distinct from sibling species. We have been conservative about presenting these entities and have done so only if taxonomic experts whom we consulted were in agreement with our assessment. These species are presented as "*Genus* sp. nr. *species*," where "sp. nr." means "species near".

A number of new synonymies and new combinations are presented in the Appendix. Some of these were discovered as a result of research related to this publication; others have been well known by taxonomists for some time but are here presented formally for the first time. For all taxa included in the Appendix, a summary statement appears in the "Notes" section.

***Adult Flight Period***

We have attempted to encompass the usual flight period, not including extremes at either end of the period or unusual second generations. The early, middle, and late thirds of a month are designated "E," "M," and "L," respectively, and months are indicated by three-letter abbreviations. Two date ranges separated by a semicolon indicate that the species either hibernates as an adult, indicated by a parenthetical letter "H," or is double-brooded, indicated by the parenthetical designation "2Br."

We obtained this phenological information from the references and collections cited in the sections on taxonomic information and/or sources of Alberta records for the species in question. Species known in Alberta only in association with humans may be found at any time of year; we have indicated this by placing "Jan - Dec" in square brackets for such species.

***Distribution in the Major Ecoclimatic Regions***

We present the distribution of Alberta Lepidoptera among the three major ecoclimatic regions in Alberta (Ecoregions Working Group 1989): Mountain (M/m), Boreal (B/b), and Grassland (G/g), in that order. An uppercase letter indicates that the species inhabits the prevalent habitat type(s) in the region; alpine, subalpine, or montane in the Mountain region; boreal forest in the Boreal region; or grasslands in the Grassland region. A lowercase letter is used for species with limited occurrence in that region. For example, a species that is known only from small patches of grassland within the Boreal region would be indicated by "b," and a species known only from small forested patches within the Grassland region would be indicated by "g." A dash indicates that the species does not normally occur in that region. Species found only in the foothills, largely a transitional region between the Mountain and Boreal ecoclimatic regions, are indicated by "m b." Species found only in the parkland, largely a transitional region between the Boreal and Grassland ecoclimatic regions, are indicated by "b g." We obtained this information from the references and collections cited in the sections on taxonomic information and/or sources of Alberta records for the species in question, as well as the authors' personal unpublished data.

***Common Name***

Common names are presented only for conspicuous species with an accepted common name that is frequently used. Common names of moths come primarily from the official Canadian list of common names (Entomological Society of Canada Common Names Committee 2007). Common names of butterflies are primarily from Bird et al. (1995) and Miller (1992). Contrary to the Entomological Society of Canada convention, species-level and subspecies-level common names of animals and plants are capitalized in this book, to distinguish them from simple descriptive phrases (e.g., to distinguish the Small Aspen Leaftier, *Acleris fuscana* (Barnes and Busck), from any small caterpillar that ties the leaves of aspen and might be referred to as a "small aspen leaftier"), and to distinguish them from common names that refer collectively to several species (e.g., to distinguish, the Yucca Moth, *Tegeticula yuccasella* (Riley), from species of moths in the subfamily Prodoxinae, which are collectively referred to as "yucca moths").

***Taxonomic References***

The taxonomic references, designated by the letter "T," cite the latest taxonomic revision that deals with the species, and any other relevant taxonomic works treating the species, but the latter are listed only if they contain information not present in the former. In some cases where no full or recent revision exists, we have listed works that provide some diagnostic information and/or an illustration.

***Source of Alberta Records***

The literature sources of Alberta records, designated by the letter "L," consist, for moths, of all recent (Bowman 1951 and newer) and selected older taxonomic and distributional literature references that specifically mention Alberta specimens. In the case of butterflies, all literature since Bowman (1951) has not been listed. For butterflies, we have provided only selected references from the literature, because the recent literature is extensive, and complete lists would be too lengthy. A question mark preceding the citation indicates that the record was reported as questionable or was vague and did not explicitly mention Alberta but instead referred to a broader region, such as "western Canada" or "the Prairie provinces," that would generally be considered to include Alberta. A record presented in square brackets indicates that the species was treated in that source, but under a different name that is currently recognized as a valid species. For butterflies listed herein at the subspecies level, publications presented in square brackets do not directly refer to the particular species–subspecies combination in Alberta, but do refer to populations in Alberta that are referable to that subspecies. Erroneous published records are not included in this section but are detailed in the "Notes" section, under both the correct species and the incorrectly applied species name.

A list of the major public collections (and, in a few cases, private collections) known to contain confirmed Alberta vouchers of the species are designated by the letter "C." These designations follow Evenhuis (2009). A question mark preceding the collection designation indicates an uncertain determination. A question mark following the designation indicates that one or more specimens are thought to be in that collection, but they could not be located by the authors. Square brackets around the collection name indicate that an authenticated photograph or other evidence of an Alberta specimen is on file there, rather than a specimen. The following public collections were thoroughly surveyed for this project:

AGRL – Agriculture and Agri-Food Canada, Lethbridge Research Station collection, Lethbridge, Alberta

CNC – Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Ontario

NFRC – Northern Forestry Centre Research Collection, Canadian Forest Service, Natural Resources Canada, Edmonton, Alberta

OLDS – Olds College insect collection, Olds, Alberta

PMAE – Royal Alberta Museum, Edmonton, Alberta

UASM – University of Alberta, E. H. Strickland Entomological Museum, Edmonton, Alberta

As well, a few records are listed from the following public collections, but these were not thoroughly surveyed and inventoried for all Alberta material:

AMNH - American Museum of Natural History, New York City, New York, USA

MCZ – Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA

MZHF – Zoological Museum, University of Helsinki, Helsinki, Finland
PMNH – Peabody Museum of Natural History, Yale University, New Haven, Connecticut, USA
RSM – Royal Saskatchewan Museum, Regina, Saskatchewan
USNM – United States National Museum, Washington, DC, USA
WLNP – Waterton Lakes National Park collection, Waterton, Alberta

Records from the following private collections are listed in cases where inadequate records exist in publications or public collections:

J. H. Acorn collection, Edmonton, Alberta
BCSC – B. C. Schmidt collection, Ottawa, Ontario
BIRD – C. D. Bird collection, Erskine, Alberta
JJDC – J. J. Dombroskie collection, Edmonton, Alberta
G. J. Hilchie collection, Edmonton, Alberta
NGKC – N. G. Kondla collection, Calgary, Alberta
R. H. Leuschner collection, Manhattan Beach, California
DAM – D. A. Macaulay collection, Peace River, Alberta
E. M. Pike collection, Calgary, Alberta
POHL – G. R. Pohl collection, Sherwood Park, Alberta
K. Roever collection, Phoenix, Arizona
J. Scott collection, Medicine Hat, Alberta

## Notes Section

We obtained the information in the "Notes" section from the references and specimens cited under the "Taxonomic References" and/or "Source of Alberta Records" sections for the species in question, unless stated otherwise. The notes include selected pertinent information on taxonomy, nomenclature, distribution, habitat, biology, and status of the species in Alberta. Notes that refer to a genus-level name are placed under the first species of that genus in the list. Taxonomic and nomenclature information includes any vital information on the species name, such as any deviation from Hodges et al. (1983) or other major reference. If a major reference incorrectly omitted the species or treated it under a different name, details are given in the note. We also list in this section any synonyms or other names that are often used for the species or that appear in important relevant works such as Bowman (1951). Most synonymies published since Hodges et al. (1983) are listed, along with their citations. Distribution and habitat notes include specific locations if the species is known from three or fewer localities in Alberta and information on the type locality if it is in Alberta. We also list the region of origin, if known, for introduced species. If occurrence of the species in Alberta is uncertain, probable, or has been reported erroneously, those details are presented in the note. Biological information includes any important information on host, behavior, phenology, ecology, or pest status. Host plants are not generally presented; Robinson

et al. (2002) can be consulted for that information. When plants are mentioned, we list the scientific name and family, except for common tree species, which are listed in full in the introduction and only by common name elsewhere.

## Excluded Taxa

The "Excluded Taxa" section lists 171 species that have been reported in a published source as occurring in Alberta but are rejected because they are no longer thought to have ever occurred here. These species are not considered as part of the Alberta fauna in any of the tables in the current report. Some of these records are based on errors or misidentifications, and many are due to changes in taxonomic status, resulting in a valid species name that is no longer applicable to Alberta populations. Details of such reports and taxonomic changes are given in the notes accompanying each species entry in this list.

## Abbreviations Used in the List

Besides the abbreviations defined above in the sections entitled "Occurrence Status in Alberta," "Adult Flight Period," "Distribution in the Major Ecoclimatic Regions," and "Source of Alberta Records," we use the standard two-letter postal abbreviation for the provinces of Canada and the states of the United States. The following additional abbreviations are also used to refer to the authors of this work:

BCS – B. Christian Schmidt.
GGA – Gary G. Anweiler.
GRP – Gregory R. Pohl.
NGK – Norbert G. Kondla.

## Index

Generic names, specific and subspecific epithets, and common names listed in the Alberta list, in the "Excluded Taxa" list, and in the Appendix are included in the index, where **each entry refers to the species number, not the page number** within this work. The index also lists additional generic names and specific and subspecific epithets mentioned in the notes and within the text sections of the "Excluded Taxa" section and the Appendix.

# Part 2.
# Lepidoptera Species Recorded from Alberta

## Section 1. Micromoths

### Eriocranioidea

#### *1. Eriocraniidae – sparkling archaic sun moths*

Minute (8–13 mm wingspan) moths with vestigial mandibles. The elongate–oval wings are often iridescent and are covered with long, hairlike scales. The wings are usually held like a tent over the body when at rest. This group can be separated from most other moths by the vestigial mandibles, and from the Acanthopteroctetidae by the presence of ocelli. Adults are diurnal, and most species fly early in the spring. Larvae are leaf blotch miners. Twenty-four species of eriocraniids are known worldwide, all from the Holarctic. Thirteen species occur in North America; only one is known from AB. The family was revised by Davis (1978a); a few more species may await discovery.

1 * R *Eriocrania semipurpurella* (Stephens, 1834) M Apr – L May – B –
T: Davis (1978a)
L: Pohl et al. (2005) C: NFRC, UASM

### Acanthopteroctetoidea

#### *2. Acanthopteroctetidae – archaic sun moths*

Small (11–16 mm wingspan) slender moths with vestigial mandibles. Adults often resemble small caddisflies, but may be brightly marked. They can be separated from most other moths by the vestigial mandibles, and from the Eriocraniidae by the absence of ocelli. Little is known of the biology of this group; one California species is a leafminer on *Ceanothus* spp. (Rhamnaceae).

Five species of acanthopteroctetids are known worldwide; four of these are restricted to western North America. One species is known from AB, and another is likely to be found here. The family was revised by Davis (1978a); a few more species may await discovery.

1.1 * P *Acanthopteroctetes tripunctata* Braun, 1921 Jul M – –
T: Davis (1978a)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | * | R | *Acanthopteroctetes bimaculata* Davis, 1969<br>T: Davis (1978a)<br>L: Pohl et al. (2004b) C: NFRC | E Jun | m | B | – |

## Hepialoidea

### *3. Hepialidae – ghost moths*

Medium-sized to large (25–100 mm wingspan) stout-bodied moths, usually with orange–brown or brown wings. The forewings have a pronounced jugal lobe, which couples the forewing with the hindwing in flight. These moths can be separated from other moths by the combination of reduced antennae, proboscis, and palps. Adults are crepuscular; the males of many species form swarms known as leks and (in at least some species) release pheromones to attract females. Females may produce thousands of eggs and are known to broadcast them in flight. Larvae are stem and root borers, and most take more than 1 year to reach maturity.

Approximately 500 species of hepialids are known worldwide, most in the tropics and Australia. Nineteen species are known from North America, six of which occur in AB. The higher taxonomy of this group is currently in flux. No comprehensive published work exists, and the treatment of North American species is scattered among several publications (Barnes and Benjamin 1925; Wagner 1988; Wagner and Tindale 1988; Schmidt and Lawrie 1999). All but one of the known AB species were illustrated by Handfield (1999). Nielsen et al. (2000) provided a global catalog and bibliography.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3 | * | R | *Gazoryctra hyperboreus* (Möschler, 1862)<br>T: Barnes and Benjamin (1925)<br>L: Bowman (1951) C: NFRC, OLDS, UASM | M Aug – M Sep | m | B | – |
| 4 | | R | *Gazoryctra roseicaput* (Neumoegen and Dyar, 1893)<br>T: Barnes and Benjamin (1925)<br>L: Bowman (1951) C: NFRC, UASM | Aug | M | – | – |
| 5 | * | R | *Gazoryctra novigannus* (Barnes and Benjamin, 1925)<br>T: Barnes and Benjamin (1925)<br>L: Barnes and Benjamin (1925), Bowman (1951) C: CNC, NFRC, OLDS, UASM | Aug – Sep | M | b | G |
| 6 | * | R | *Korscheltellus gracilis* (Grote, 1864)<br>Conifer Swift Moth<br>T: Wagner (1988)<br>L: Bowman (1951), Wagner (1988), Pohl et al. (2004b) C: NFRC, OLDS, UASM | Jul | m | B | – |
| 7 | * | U | *Sthenopis argenteomaculatus* (Harris, 1842)<br>Silver-spotted Ghost Moth<br>T: Forbes (1923)<br>L: Bowman (1951) C: Unknown | M Jun – E Jul | m | B | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 8 | * | R | *Sthenopis purpurascens* (Packard, 1863)<br>T: Schmidt and Lawrie (1999)<br>L: Bowman (1951), Prentice (1965), Schmidt and Lawrie (1999) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – E Aug | – | B | g |

## Nepticuloidea

### 4. Nepticulidae – pygmy eye-cap moths

Minute (3–10 mm wingspan) moths with variable wing patterns. They can be separated from most other minute moths via the combination of the rough-scaled head, presence of an antennal eye cap, and primitive wing venation. They can be separated from Opostegidae by the presence of extensive dark areas on the forewings. Larvae are leafminers.

Approximately 800 species of Nepticulidae are known worldwide, with many more remaining to be discovered. Ninety-seven species are known in North America. This family has been poorly collected in western North America; three species are reported from AB, but other species likely occur here as well. The Canadian Nepticulidae were revised by Wilkinson and Scoble (1979), but some of that work has been superseded by Wilkinson (1979, 1981), Wilkinson and Newton (1981), and Newton and Wilkinson (1982).

**Nepticulinae**

**Nepticulini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 9 | * | R | *Stigmella fuscotibiella* (Clemens, 1862)<br>T: Newton and Wilkinson (1982)<br>L: None C: POHL | E Jun | – | B | – |
| 10 | * | U | *Stigmella populetorum* (Frey and Boll, 1878)<br>T: Newton and Wilkinson (1982)<br>L: None C: ?POHL | L Jun | – | B | – |

**Trifurculini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10.1 | * | P | *Ectoedemia canadensis* (Braun, 1914)<br>T: Wilkinson (1981) | ? | M | – | – |
| 11 | * | R | *Ectoedemia weaveri* (Stainton, 1855)<br>T: van Nieukerken (1986), Parenti (2000)<br>L: Macaulay and Pohl (2005) C: NFRC | M Jul – E Aug | – | B | – |

### 5. Opostegidae – white eye-cap moths

Minute (6–12 mm wingspan) moths with predominantly white wings. They can be separated from most other small moths by the combination of a tuft of hairlike scales on the head, presence of an antennal eye cap, and primitive wing venation. They can be separated from the Nepticulidae by the absence of extensive dark areas on the forewings. Larvae are leafminers.

Over 100 species of Opostegidae are known worldwide, with many undescribed species expected to be found. Ten species are known from North America; one of these

is known from AB. Taxonomic coverage of the Opostegidae is excellent: Davis (1989) provided a genus-level treatment and catalog for the world fauna, Diskus and Puplesis (2003) a catalog of the world fauna, and Davis and Stonis (2007) a monograph of the New World fauna.

**Oposteginae**

12 R *Pseudopostega cretea* (Meyrick, 1920) Jul – B g
T: Davis and Stonis (2007)
L: Bowman (1951) C: UASM

## Incurvarioidea

### *6. Heliozelidae – shield bearer moths*

Minute (4–10 mm wingspan) day-flying moths, with a scaled proboscis and metallic scales on the body and wings. Females have piercing ovipositors. They resemble several other families of small moths, but can be distinguished by wing vein characters. Larvae of most species mine the leaves of trees, shrubs, and vines; a few are stem or petiole miners. When mature, the larvae cut a disk from the host plant in which to pupate; hence the common name.

Approximately 100 species of heliozelids are known worldwide; many remain undescribed, especially in the tropics. Thirty species are known from North America; one of these was recently discovered in AB. The group is poorly known taxonomically in North America; the only modern reference is Lafontaine (1973), which covers three species.

13 * U *Antispila aurirubra* Braun, 1915 L May – L Jun – B g
T: Braun (1915)
L: None C: ?JJDC, ?POHL

### *7. Adelidae – fairy moths*

Small (10–25 mm wingspan) day-flying moths with reduced palps, a scaled proboscis, and iridescent greenish purple wings with white marks. Males of most species have extremely long antennae, up to three times the forewing length. They are often found swarming above host plants. Females have piercing ovipositors. Little is known about their biology. In some species, eggs are laid in flowers, where the larvae feed briefly before making a case, in which they drop to the ground and continue to feed, probably on dead leaves.

Almost 300 species of Adelidae are known worldwide. Eighteen species are known from North America, including four from AB. Taxonomic coverage of the Adelidae is incomplete for North America; Powell (1969) covered the genera *Nemophora* (as *Elasmion*) and *Adela*, but the remaining genus, *Cauchas*, has never been revised.

**Adelinae**

14 * R *Cauchas cockerelli* (Busck, 1915) L May – L Jul M b g
L: Bowman (1951) C: NFRC

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 15 | * | R | *Cauchas simpliciella* (Walsingham, 1880)<br>T: Powell (1969)<br>L: None C: CNC, NFRC | Jul | M | – | – |
| 16 | | R H | *Nemophora bellela* (Walker, 1863)<br>T: Powell (1969)<br>L: Bowman (1951), Powell (1969), Lafontaine and Wood (1997) C: CNC, NFRC, OLDS, UASM | L Jun – M Jul | M | B | – |
| 17 | | R | *Adela purpurea* Walker, 1863<br>T: Powell (1969)<br>L: Bowman (1951), Powell (1969), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | E May – E Jun | – | B | G |

## 8. Prodoxidae – prodoxid moths

Small (10–28 mm wingspan) moths with a scaled proboscis and similarly shaped forewings and hindwings that are held tentlike over the body when at rest. Females have piercing ovipositors. This group includes the yucca moths, which have a well-studied interdependent relationship with yucca plants. All larvae are concealed feeders in seeds, stems, and (in one species) leaves. The larva of one European species is known to induce galls in which it feeds.

Approximately 85 species of Prodoxidae are known, mostly from the Nearctic. Sixteen species are reported from AB. Most groups in the Prodoxidae have been revised recently (Davis 1967; Davis et al. 1992; Pellmyr 1999; Pellmyr et al. 2005), but the genus *Lampronia* is in need of modern revision.

**Lamproniinae**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 18 | | R | *Lampronia russatella* (Clemens, 1860)<br>T: Dietz (1905)<br>L: Pohl et al. (2005) C: CNC | M Jun | – | B | – |
| 19 | * | U H | *Lampronia capitella* (Clerck, 1759)<br>L: Pohl et al. (2005) C: ?NFRC | E Jun – M Jun | – | B | – |
| 20 | * | R | *Lampronia taylorella* (Kearfott, 1907)<br>L: None C: CNC | M Jun | M | B | – |
| 21 | * | R | *Lampronia aenescens* (Walsingham, 1888)<br>T: Dietz (1905), Davis (1978b)<br>L: Bowman (1951) C: CNC, NFRC | Jun – E Jul | M | – | – |
| 22 | * | R | *Lampronia sublustris* Braun, 1925<br>T: Braun (1925)<br>L: Braun (1925), Bowman (1951) C: CNC, NFRC, UASM | Jun | M | B | – |
| 23 | * | R | *Lampronia humilis* (Walsingham, 1888)<br>T: Dietz (1905)<br>L: Bowman (1951) C: NFRC, UASM | May | – | B | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24 | * | R | *Tetragma gei* Davis and Pellmyr, 1992<br>T: Davis et al. (1992)<br>L: Pohl et al. (2005) C: CNC, NFRC | E Jul | M | – | – |
| **Prodoxinae** | | | | | | | |
| 25 | * | R | *Greya piperella* (Busck, 1904)<br>T: Davis et al. (1992)<br>L: Bowman (1951), Davis et al. (1992) C: CNC, NFRC | Jun – Aug | M | – | – |
| 26 | * | R | *Greya obscuromaculata* (Braun, 1921)<br>T: Davis et al. (1992)<br>L: Bowman (1951), Davis et al. (1992) C: CNC | Jun – Jul | M | – | – |
| 27 | * | U | *Greya politella* (Walsingham, 1888)<br>T: Davis et al. (1992), Brown et al. (1997)<br>L: Bowman (1951), Pohl et al. (2004b) C: ?CNC | Jun – Jul | M | b | – |
| 28 | * | R | *Greya enchrysa* Davis and Pellmyr, 1992<br>T: Davis et al. (1992)<br>L: Davis et al. (1992) C: CNC | L May – E Jul | M | – | – |
| 29 | * | R | *Greya variata* (Braun, 1921)<br>T: Davis et al. (1992)<br>L: Bowman (1951), Davis et al. (1992) C: CNC | Jun – Jul | M | – | – |
| 30 | * | R | *Greya subalba* Braun, 1921<br>T: Davis et al. (1992)<br>L: Bowman (1951), Davis et al. (1992) C: CNC, NFRC | L Jun – M Jul | M | – | – |
| 31 | * | R | *Tegeticula yuccasella* (Riley, 1872)<br>Yucca Moth<br>T: Pellmyr (1999)<br>L: Bowman (1951), Pellmyr (1999) C: AGRL, NFRC, UASM | L Jun – E Jul | – | – | G |
| 32 | * | R | *Tegeticula corruptrix* Pellmyr, 1999<br>Non-pollinating Yucca Moth<br>T: Pellmyr (1999)<br>L: Pohl et al. (2005) C: AGRL, NFRC | L Jun – E Jul | – | – | G |
| 33 | * | R | *Prodoxus quinquepunctella* (Chambers, 1875)<br>Five-spotted Bogus Yucca Moth<br>T: Davis (1967)<br>L: Bowman (1951) C: AGRL, NFRC, UASM | L Jun – E Jul | – | – | G |

### *9. Incurvariidae – leafcutter moths*

Minute (6–10 mm wingspan) moths, usually with iridescent green–purple forewings and translucent hindwings. They have a scaled proboscis, and females have a piercing

ovipositor. Larvae are leafminers in the early instars; later they construct a case of silk and cut pieces of leaf, from which they skeletonize leaves.

Approximately 100 species of Incurvariidae are known. They are found throughout the world, but are best represented in Australia. Five species are known from North America, at least one of which probably occurs in AB. The family has not been revised for many years. The species that probably occurs in AB was treated by Dietz (1905).

33.1 * P H *Phylloporia bistrigella* (Haworth, 1828) Jun – B –
T: Dietz (1905)

## Tischerioidea

### *10. Tischeriidae – trumpet leafminer moths*

Minute (5–11 mm wingspan) moths with narrow wings of variable coloration. Larvae are leafminers, forming blotch or trumpet-shaped mines.

Approximately 114 species of Tischeriidae are known worldwide. They occur in all parts of the world except Australasia. Forty-seven species are known to occur in North America; one species is known in AB. The North American Tischeriidae were revised by Braun (1972); no new species have been described since then, but Puplesis and Diskus (2003) cataloged the world fauna and made many changes in combination.

34 * R *Coptotriche admirabilis* (Braun, 1925) May – Aug – b G
T: Braun (1972)
L: None C: UASM

## Tineoidea

### *11. Tineidae – fungus moths*

Minute to small (10–18 mm wingspan) moths with yellowish, brownish, or mottled black and white wings. They can usually be recognized by the erect scales on the head, short labial palps with stiff lateral bristles, a poorly developed proboscis without scales at the base, and the resting posture, with the wings held tentlike over the body. Larvae feed on fungi and detritus, often in specialized habitats such as vertebrate nests or fungal fruiting bodies. Several species are pests of stored products or of fabrics made of wool, fur, or feathers. Many species are not attracted to light and are rarely collected.

Approximately 3000 species of tineids have been described worldwide. In North America, 116 species are known; 19 species are reported from AB. The group is in need of taxonomic work, and many species remain undescribed, including at least one new species found in AB. Many genera have not been placed or have been placed only tentatively to subfamily. Robinson (2003) maintains a website of worldwide nomenclature. The only large taxonomic works were published by Dietz (1905) and Forbes (1923). The former treats all but two of the species known or expected to occur in AB,

but it is poorly illustrated and out of date nomenclaturally. Other useful works include Davis (1978c) and Robinson (1986). Identification is best done by comparison to authoritatively determined material.

**Myrmecozelinae**

35 * H I *Haplotinea insectella* (Fabricius, 1794) [Jan – Dec] – – –
T: Dietz (1905), Madrid and Sinha (1984)
L: Bowman (1951) C: CNC, UASM

**Meessiinae**

36 * R *Homosetia bifasciella* (Chambers, 1876) E Jul – M Jul – B –
T: Dietz (1905)
L: None C: POHL

37 R *Homosetia fasciella* (Chambers, 1873) Jul – B –
T: Dietz (1905)
L: Pohl et al. (2004b) C: NFRC

37.1 * P *Homosetia marginimaculella* (Chambers, 1875) Aug – B –
T: Dietz (1905)

**Nemapogoninae**

38 R *Nemapogon acapnopennella* (Clemens, 1863) Jun – Jul – B –
T: Dietz (1905)
L: Pohl et al. (2004b, 2005) C: NFRC

39 * R *Nemapogon* sp. nr. *acapnopennella* (Clemens, 1863) Jun – Aug – B –
L: Pohl et al. (2004b, 2005) C: NFRC

40 * R *Nemapogon auropulvella* (Chambers, 1873) Jul – B –
T: Dietz (1905)
L: ?Forbes (1923) C: NFRC

41 * H I *Nemapogon granella* (Linnaeus, 1758) [Jan – Dec] – – –
European Grain Moth
T: Dietz (1905)
L: Bowman (1951) C: UASM

42 R *Nemapogon roburella* (Dietz, 1905) Jun – B g
T: Dietz (1905)
L: Bowman (1951), Pohl et al. (2004b) C: ?NFRC, UASM

43 * R *Nemapogon tylodes* (Meyrick, 1919) Jun – Jul – B –
L: None C: POHL

**Tineinae**

44 * R *Tinea irrepta* Braun, 1926 L Jun – E Aug M B G
T: Braun (1926)
L: Braun (1926), Bowman (1951) C: NFRC, OLDS

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 45 | * | H I | *Tinea pellionella* (Linnaeus, 1758)<br>Case-making Clothes Moth<br>T: Dietz (1905)<br>L: Bowman (1951) C: OLDS, UASM | [Jan – Dec] | – | – | – |
| 46 | * | R | *Niditinea fuscella* (Linnaeus, 1758)<br>T: Dietz (1905)<br>L: Bowman (1951) C: UASM | Jul – Aug | – | B | g |
| 47 | | R | *Niditinea orleansella* (Chambers, 1873)<br>T: Dietz (1905)<br>L: Pohl et al. (2004b) C: NFRC | Jul – Aug | – | B | – |
| 48 | * | R I? | *Monopis crocicapitella* (Clemens, 1859)<br>T: Dietz (1905), Parenti (2000)<br>L: None C: POHL | Jun | m | b | g |
| 49 | * | R H | *Monopis laevigella* ([Denis and Schiffermüller], 1775)<br>T: Parenti (2000)<br>L: Pohl et al. (2004b) C: NFRC, OLDS | M Jun – M Aug | – | B | g |
| 50 | | R H | *Monopis monachella* (Hübner, 1796)<br>T: Dietz (1905)<br>L: Bowman (1951) C: CNC, NFRC, UASM | L Jun – Sep | – | B | – |
| 51 | | R H | *Monopis spilotella* Tengström, 1848<br>T: Dietz (1905), Petersen (1960)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E Jun – E Aug | – | B | g |
| 52 | * | R | *Elatobia carbonella* (Dietz, 1905)<br>T: Dietz (1905)<br>L: [Bowman (1951)] C: NFRC | Jun | M | B | g |
| 53 | * | H I | *Tineola bisselliella* (Hummel, 1823)<br>Webbing Clothes Moth<br>T: Dietz (1905), Provorova (1996)<br>L: Bowman (1951) C: NFRC, UASM | [Jan – Dec] | – | – | – |

### 12. Acrolophidae – tube moths

Small to medium-sized (15–35 mm wingspan) drab tan and brown mottled moths with rounded wings and stout bodies. Larvae construct long silken tubes in soil or litter. Most species feed on detritus or plant debris, but some feed on living plants, dung, or fungi.

Acrolophids are restricted to the New World, and their diversity is highest in the neotropics. Approximately 270 species are known worldwide, and 64 species are known from North America, mostly from the Southwest. One species is known from AB. Two genera of acrolophids occur in North America; *Acrolophus* was revised by Hasbrouck (1964), and *Amydria* was treated by Dietz (1905) as part of the subfamily Amydriinae in the Tineidae. In many older works, this family was placed within the Tineidae.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 54 | * | R | *Amydria effrentella* Clemens, 1859<br>T: Dietz (1905)<br>L: Bowman (1951) C: CNC, NFRC | Jun | m | – | G |

### *13. Psychidae – bagworm moths*

Males are minute to small (8–25 mm wingspan) moths with drab brown wings; most females are wingless, and many resemble larvae. Larvae construct cases of plant matter and debris, in which they move about while feeding. Most species feed on plants, but at least one genus (*Dahlica*) feeds on lichens and debris. Parthenogenesis has developed in a few genera, including *Dahlica*.

Approximately 1000 species of psychids are known worldwide. They occur throughout the world, but most species are restricted to the Palearctic. Twenty-seven species are known from North America, four of which are reported from AB. Davis (1964) treated all of the known North American species, with the exception of two recently introduced species in the genus *Dahlica*.

**Taleporiinae**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 55 | * | R | *Taleporia walshella* (Clemens, 1862)<br>T: Davis (1964)<br>L: Pohl et al. (2005) C: NFRC | L May – M Jun | M | B | – |
| 56 | * | R I | *Dahlica triquetrella* (Hübner, 1812)<br>T: Leech and Sugden (1967)<br>L: Pohl et al. (2005) C: NFRC, PMAE | Apr – Oct | – | b | g |

**Psychinae**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 57 | * | R | *Hyaloscotes fragmentella* Edwards, 1877<br>T: Davis (1964)<br>L: Bowman (1951) C: Unknown | Jun | M | – | – |
| 58 | * | R | *Hyaloscotes pithopoera* (Dyar, 1923)<br>T: Davis (1964)<br>L: Davis (1964) C: CNC | Jul | M | – | – |

## Gracillarioidea

### *14. Douglasiidae – douglasiid moths*

Minute (8–12 mm wingspan) moths with bicolored forewings and narrow hindwings, short drooping palps, and head covered with a smooth layer of scales. Adults rest with the front of the body raised, similar to Gracillariidae. Larvae are stem borers and flower petiole miners of Rosaceae and other plants.

Only 25 species of Douglasiidae are known worldwide, all but one from the Holarctic. Seven species are known from North America, all in the genus *Tinagma*. Four of these have been reported from AB. Gaedike (1990) revised the Nearctic species, but the genitalia illustrations in that publication are inadequate to make accurate deter-

minations. At least three species occur in Alberta, but because of the aforementioned diagnostic problems, few specimens have been reliably identified.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 59 | * | R | *Tinagma obscurofasciella* (Chambers, 1881)<br>T: Gaedike (1990)<br>L: None C: CNC | Jun | M | – | – |
| 60 | * | U | *Tinagma pulverilinea* Braun, 1921<br>T: Gaedike (1990)<br>L: Bowman (1951) C: Unknown | Jun – Jul | M | b? | – |
| 61 | * | R | *Tinagma giganteum* Braun, 1921<br>T: Gaedike (1990)<br>L: Bowman (1951) C: CNC | Jun – E Aug | M | – | – |
| 62 | * | R | *Tinagma brunneofasciatum* Gaedike, 1990<br>T: Gaedike (1990)<br>L: Gaedike (1990) C: USNM | Jul | M | – | – |

### 15. Bucculatricidae – ribbed-cocoon maker moths

Minute (6–10 mm wingspan) moths with narrow lanceolate wings and an elongate head, which extends beyond the eyes, such that it appears to be almost hypognathous. The first antennal segment may be somewhat enlarged, similar to but not as extensive as the antennal eye cap of the lyonetiids. Larvae are hypermetamorphic. Larvae of most species are leafminers in the first two instars and external skeletonizers in the later instars; a few species are miners of plant stems or galls. They construct distinctive ribbed cocoons; hence the common name.

Approximately 250 species of Bucculatricidae are known worldwide. They are concentrated in the Nearctic, where 103 species are known, all in the genus *Bucculatrix*. Only two species have been recorded from AB, but more likely occur here. Braun (1963) revised the North American species, and four additional species have been described since then.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 63 | | R | *Bucculatrix canadensisella* Chambers, 1875<br>Birch Skeletonizer<br>T: Braun (1963), Digweed (1998)<br>L: Bowman (1951), Prentice (1965), Digweed (1998), Pohl et al. (2004b) C: CNC, NFRC, UASM | E Jun – L Jul | – | B | g |
| 64 | * | R | *Bucculatrix frigida* Deschka, 1992<br>T: Deschka (1992)<br>L: Deschka (1992) C: Unknown | E Aug | M | – | – |

### 16. Gracillariidae – gracillariid moths

Minute to small (8–15 mm wingspan) moths, often with colorful forewings. Both pairs of wings are narrow, and the hindwings have prominent wing fringes much wider than the wing itself. They have long antennae, at least 0.9 times the length of the forewing. Adults of

Gracillariinae rest with the anterior part of the body raised off the substrate on the forelegs and midlegs. Larvae of most species are leafminers; a few are stem miners or gall miners.

Approximately 1800 species of gracillariids are known, from all parts of the world. De Prins and De Prins (2005) published a world catalog. Two hundred and ninety-five species are known from North America, including 25 species reported from AB. Many species likely remain undescribed, and the family is in need of revision. Braun (1908), Opler and Davis (1981) and Davis and Deschka (2001) collectively have covered most species in the subfamily Lithocolletinae, which includes the species-rich genera *Phyllonorycter* and *Cameraria*. Few recent works have dealt with species in the subfamily Gracillariinae, which includes the species-rich genus *Caloptilia*. The latter includes several common species that are occasional pests of ornamental trees. Many species of gracillariids are difficult to identify without information about the host plant. Forbes (1923) provided excellent keys and synopses organized by host plant, covering many species of gracillariids that occur in western Canada.

**Gracillariinae**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 65 | | R | *Caloptilia acerifoliella* (Chambers, 1875)<br>L: Bowman (1951) C: UASM | Apr – Jun;<br>Sep – Oct (H) | – | B | g |
| 66 | * | R | *Caloptilia alnivorella* (Chambers, 1875)<br>Alder Leafminer<br>T: McDunnough (1946b), Pohl et al. (2004c)<br>L: Bowman (1951), Prentice (1965), Pohl et al. (2004b, 2004c) C: CNC, NFRC | E May – M Jun;<br>L Jul – Oct (H) | – | B | g |
| 67 | | R | *Caloptilia anthobaphes* (Meyrick, 1921)<br>L: Pohl et al. (2004b) C: CNC, NFRC | M May – L Jun | – | B | – |
| 68 | * | U | *Caloptilia betulivora* McDunnough, 1946<br>T: McDunnough (1946b)<br>L: Pohl et al. (2004b) C: ?NFRC | E May – M Jun;<br>L Jul – Oct (H) | m | B | g |
| 69 | | R | *Caloptilia canadensisella* (McDunnough, 1956)<br>T: McDunnough (1956)<br>L: Pohl et al. (2004b) C: CNC, ?NFRC | Jun | – | B | – |
| 70 | | R | *Caloptilia cornusella* (Ely, 1915)<br>L: Bowman (1951) C: UASM | May – Jul | – | B | – |
| 71 | | R | *Caloptilia coroniella* (Clemens, 1864)<br>L: Pohl et al. (2004b) C: NFRC | E Jun | – | b | – |
| 72 | * | R i | *Caloptilia fraxinella* (Ely, 1915)<br>Ash Leaf Cone Roller<br>T: Pohl et al. (2004c)<br>L: Pohl et al. (2004c) C: CNC, NFRC | E May – E Jun;<br>M Jul – Oct (H) | – | b | g |
| 73 | * | R | *Caloptilia invariabilis* (Braun, 1927)<br>Cherry Leaf-cone Caterpillar<br>L: Bowman (1951); [Pohl et al. (2004b)] C: NFRC, UASM | Apr – Jun;<br>Sep – Oct (H) | – | B | g |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 74 | * | R | *Caloptilia murtfeldtella* (Busck, 1904)<br>L: Bowman (1951) C: CNC, NFRC | Jun | M | – | – |
| 75 | | R | *Caloptilia negundella* (Chambers, 1876)<br>Boxelder Leafroller<br>L: Bowman (1951), Prentice (1965) C: CNC, NFRC, UASM | Apr – Jun;<br>Sep – Oct (H) | – | B | g |
| 75.1 | * | P | *Caloptilia rhoifoliella* (Chambers, 1876) | Aug | – | – | g |
| 76 | | R H | *Caloptilia stigmatella* (Fabricius, 1781)<br>L: Pohl et al. (2004b) C: NFRC, OLDS | E May – E Jun;<br>L Jul – Oct (H) | m | B | g |
| 77 | | R | *Caloptilia strictella* (Walker, 1864)<br>T: McDunnough (1946b), Pohl et al. (2004c)<br>L: None C: CNC, NFRC | Jul | – | B | g |
| 78 | | R I | *Caloptilia syringella* (Fabricius, 1794)<br>Lilac Leafminer<br>L: Ives and Wong (1988) C: AGRL, NFRC, OLDS | Apr – Jun;<br>Sep – Oct (H) | – | B | g |
| 79 | | R | *Micrurapteryx salicifoliella* (Chambers, 1872)<br>T: Ives and Wong (1988)<br>L: Pohl et al. (2005) C: CNC, NFRC | E May – M Jun;<br>E Jul – Oct (H) | m | B | g |
| 80 | | R | *Parectopa albicostella* Braun, 1925<br>L: Bowman (1951) C: UASM | L May – Jul | – | B | g |
| 81 | | R | *Parectopa pennsylvaniella* (Engel, 1907)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM | L Jun – E Jul | – | B | g |
| 82 | | R | *Parornix conspicuella* (Dietz, 1907)<br>L: Pohl et al. (2004b) C: CNC, ?NFRC, UASM | E Jun – L Jul | – | B | g |
| 83 | | R | *Acrocercops astericola* (Frey and Boll, 1873)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM | E Jun – E Jul | M | B | g |

**Lithocolletinae**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 84 | | R | *Protolithocolletis lathyri* Braun, 1929<br>L: Pohl et al. (2004b) C: CNC, NFRC | L May – L Aug | – | B | – |
| 85 | * | R H | *Phyllonorycter apparella* (Herrich-Schäffer, 1855)<br>Aspen Leaf Blotch Miner<br>T: Davis and Deschka (2001)<br>L: Prentice (1965), Davis and Deschka (2001) C: CNC | M Jul – L Oct | – | B | g |
| 86 | | R | *Phyllonorycter martiella* (Braun, 1908)<br>T: Braun (1908)<br>L: Pohl et al. (2004b) C: NFRC | L Jul | – | B | – |
| 87 | * | R | *Phyllonorycter nipigon* (Freeman, 1970)<br>Balsam Poplar Leaf Blotch Miner<br>T: Davis and Deschka (2001)<br>L: Davis and Deschka (2001) C: NFRC | L Jul – L Oct | – | B | g |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 88 | * | R | *Phyllonorycter salicifoliella* (Chambers, 1875)<br>Willow Leaf Blotch Miner<br>T: Davis and Deschka (2001)<br>L: Davis and Deschka (2001) C: NFRC | Jul – Oct | – | B | g |
| 88.1 | * | P | *Phyllonorycter scudderella* (Frey and Boll, 1873)<br>T: Davis and Deschka (2001) | Apr; Jul (H) | – | B | – |

**Phyllocnistinae**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 89 | * | R | *Phyllocnistis populiella* Chambers, 1875<br>Aspen Serpentine Leafminer<br>T: Hiratsuka et al. (1995)<br>L: Prentice (1965) C: CNC, NFRC | Jul – Aug | – | B | – |

## Yponomeutoidea

### *17. Yponomeutidae – ermine moths and needleminer moths*

Minute to small (6–30 mm wingspan) moths, often with brightly marked wings. No morphological characters unequivocally define this family. Adults of some species rest with the head held close to the ground and the abdomen lifted; others sit with the body parallel to the substrate. Larvae have diverse habits, and the family includes communal web makers, needleminers, and leafminers.

The family Yponomeutidae, as currently defined, contains almost 600 species occurring in all faunal regions. Eighty-two species are known from North America; 14 species have been reported from AB, and a few others may be found here as well. Various workers have included the Ypsolophidae and Plutellidae in and/or have excluded the Argyresthiinae from the Yponomeutidae. As recognized by Dugdale et al. (1999), this family includes two main lineages, the ermine moths (subfamily Yponomeutinae) and the needleminer moths (subfamily Argyresthiinae). The family is in need of higher-level work, as well as species-level work. Useful publications include Busck (1907), Braun (1940), and Freeman (1960, 1972).

**Yponomeutinae – ermine moths**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 90 | | R H | *Swammerdamia caesiella* (Hübner, 1796)<br>T: Duckworth (1965)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, OLDS, UASM | Jun – Jul | – | B | g |
| 91 | | R | *Zelleria haimbachi* Busck, 1915<br>Pine Needle Sheathminer<br>T: Freeman (1960), Powell and De Benedictis (1995a)<br>L: None C: NFRC | M Jul – M Aug | – | B | – |
| 92 | * | R | *Kessleria parnassiae* Braun, 1940<br>T: Braun (1940), Kyrki (1985)<br>L: Kyrki (1985) C: CNC, UASM | May; Sep (H) | M | – | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 93 | | R | *Euhyponomeutoides gracilariella* (Busck, 1904)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM | M May – E Jun; M Jul – Oct (H) | – | B | g |

**Argyresthiinae – needleminer moths**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 94 | | R | *Argyresthia abies* Freeman, 1972<br>T: Freeman (1972)<br>L: Pohl et al. (2004b) C: NFRC | Jun | – | B | – |
| 95 | * | U | *Argyresthia calliphanes* Meyrick, 1913<br>L: ?Forbes (1923), ? Covell (1984) C: Unknown | Jun – Aug | – | B | g |
| 95.1 | * | P | *Argyresthia columbia* Freeman, 1972<br>T: Freeman (1972) | Jun | M | – | – |
| 96 | | R I | *Argyresthia conjugella* Zeller, 1839<br>Apple Fruit Moth<br>T: Busck (1907)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC | M Jun – M Jul | M | B | g |
| 96.1 | * | P | *Argyresthia flexilis* Freeman, 1960<br>T: Freeman (1972) | Jun | M | – | – |
| 97 | * | R I | *Argyresthia goedartella* (Linnaeus, 1758)<br>T: Busck (1907)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM | Jul | – | b | g |
| 98 | | R | *Argyresthia laricella* Kearfott, 1908<br>Larch Shoot Moth<br>T: Freeman (1972)<br>L: Prentice (1965), Freeman (1972) C: CNC, ?NFRC | Jul | m | B | – |
| 99 | | R | *Argyresthia mariana* Freeman, 1972<br>T: Freeman (1972)<br>L: None C: NFRC | Jun | – | B | – |
| 100 | * | R | *Argyresthia monochromella* Busck, 1921<br>L: Bowman (1951) C: CNC | Jun | M | – | – |
| 101 | | R | *Argyresthia oreasella* Clemens, 1860<br>Cherry Shoot Borer<br>T: Busck (1907)<br>L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul – Aug | M | B | g |
| 102 | | R | *Argyresthia picea* Freeman, 1972<br>T: Freeman (1972)<br>L: None C: NFRC | M May – M Jun | M | B | – |
| 103 | | R H | *Argyresthia pygmaeella* (Hübner, 1810)<br>T: Busck (1907)<br>L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul | M | B | g |

## *18. Ypsolophidae – falcate-winged moths*

Small (15–20 mm wingspan) moths with elongate, often brightly marked wings, ending in a tapered point or curved tip. Larvae of most species feed on the leaves of deciduous plants, on which they construct an open web.

Approximately 130 species of ypsolophids are known, primarily from the Holarctic region. Thirty-nine species are known in North America, eight of which have been reported in AB. This family has previously been placed within the Yponomeutidae by various workers. The Cereal Stem Moth, *Ochsenheimeria vacculella* F. von Röslerstamm, previously placed in its own family associated with the Tineoidea, has been placed within the Ypsolophidae by Dugdale et al. (1999). This important cereal pest was accidentally introduced to North America from Europe, but has not yet been reported in AB. No revisionary works have been published on the Ypsolophidae. Most species are easily separated via external characters, but few illustrations of them have been published. Comparison to authoritatively identified specimens or images is required to make determinations.

**Ypsolophinae**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 104 | | R | *Ypsolopha canariella* (Walsingham, 1881)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | Jul – Sep | M | B | G |
| 105 | * | R H | *Ypsolopha dentella* (Fabricius, 1775)<br>European Honeysuckle Leafroller<br>T: Forbes (1923), Parenti (2000)<br>L: Pohl et al. (2005) C: NFRC, OLDS | Jul | – | b | g |
| 106 | * | R | *Ypsolopha dentiferella* (Walsingham, 1881)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM | Jul – Sep | M | B | G |
| 107 | | R | *Ypsolopha dorsimaculella* (Kearfott, 1907)<br>L: Bowman (1951), Prentice (1965) C: CNC, NFRC, UASM | Jul | M | B | g |
| 108 | | R | *Ypsolopha falciferella* (Walsingham, 1881)<br>L: Bowman (1951) C: NFRC, OLDS, UASM | Apr – Jun; Sep – Oct (H) | – | B | g |
| 109 | * | R | *Ypsolopha flavistrigella* (Busck, 1906)<br>T: Powell and Opler (2009)<br>L: None C: NFRC, OLDS | Jun – Jul; Sep (H) | – | b | g |
| 110 | * | R | *Ypsolopha rubrella* (Dyar, 1902)<br>L: None C: CNC | L Jul | M | – | – |
| 111 | | R | *Ypsolopha senex* (Walsingham, 1889)<br>L: Bowman (1951), Prentice (1965), Ives and Wong (1988) C: CNC, NFRC, OLDS, UASM | Aug | M | B | g |

### 19. Plutellidae – diamondback moths

Small (15–20 mm wingspan) moths with elongate lanceolate wings, usually with a conspicuous fringe on the tornal area of the forewing. Most species have distinctive patterns of white, black, and brown on their forewings. The larvae of most species feed on crucifers and construct loose webs from which they skeletonize leaves. This group includes the Diamondback Moth, *Plutella xylostella*, which is an important pest of crucifer crops throughout the northern hemisphere.

Approximately 300 species of diamondback moths are known, from all parts of the world. Twelve species are known from North America; seven of these are known from AB. More species currently known only from the Palearctic are likely to be discovered in northwestern North America, including AB. The family Plutellidae is poorly defined morphologically; some workers have placed it within the Yponomeutidae. In North America the group is in need of revision; Palearctic species were revised by Baraniak (2007). Smith and Sears (1984) provided diagnostic characters and illustrations of two species.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 112 | * | R | *Plutella notabilis* Busck, 1904<br>L: None C: CNC | M Aug | M | – | – |
| 113 | | R | *Plutella vanella* Walsingham, 1881<br>L: Pohl et al. (2005) C: CNC, NFRC, OLDS | E Jul – M Aug | M | B | – |
| 114 | * | R H | *Plutella xylostella* (Linnaeus, 1758)<br>Diamondback Moth<br>T: Smith and Sears (1984), Baraniak (2007)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul – Oct | M | B | G |
| 115 | * | R I | *Pseudoplutella porrectella* (Linnaeus, 1758)<br>T: Smith and Sears (1984), Baraniak (2007)<br>L: Bowman (1951) C: CNC, UASM | Jun – Aug | M | B | g |
| 116 | * | R | *Plutelloptera haasi* (Staudinger, 1883)<br>T: Baraniak (2007)<br>L: None C: CNC | Jun – Aug | M | B | – |
| 117 | | R | *Rhigognostis interrupta* (Walsingham, 1881)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM | May | – | B | g |
| 118 | | R | *Rhigognostis poulella* (Busck, 1904)<br>L: Bowman (1951) C: CNC, UASM | Sep | M | b | – |

### 20. Acrolepiidae – false diamondback moths

Small (12–15 mm wingspan) moths with narrow lanceolate wings, usually with a conspicuous fringe on the tornal area of the forewing. This family is separated from similar yponomeutoid groups by details of the genitalia and venation. Larvae are leaftiers and skeletonizers or stem, bulb, and seed borers of Liliaceae and a number of dicot families.

Approximately 95 species of Acrolepiidae are known globally, most in the Palaearctic. Eight species are known in North America; one is known in AB. Gaedike (1984)

revised the family for North and South America. Landry (2007) reviewed the North American species of *Acrolepiopsis*.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 119 | * | R | *Acrolepiopsis californica* Gaedike, 1984<br>T: Gaedike (1984, 1994), Landry (2007)<br>L: Pohl et al. (2005), Landry (2007) C: CNC, NFRC | M Apr – L Jun;<br>Oct (H) | – | B | – |

## *21. Glyphipterigidae – sedge moths*

Small (10–20 mm wingspan) moths, usually with metallic greenish forewings with white and silver marks. Adults of most species are diurnal. Larvae of most species are stem borers or leafminers in monocots; a few feed on dicots.

A total of 384 species of glyphipterigids are known worldwide, primarily from the tropics. Forty species are known in North America, and four of these have been reported from AB. Heppner (1985) revised the family for North America; four species from southeastern United States have been added since then. Before the work of Heppner (1985), the family Glyphipterigidae had been a heterogeneous assemblage of diurnal species that have now been assigned to 25 different families. The group was often associated with the Choreutoidea and Copromorphoidea in earlier works, but is now recognized as belonging to the Yponomeutoidea.

**Glyphipteriginae**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 120 | * | R | *Glyphipterix urticae* Heppner, 1985<br>T: Heppner (1985)<br>L: Heppner (1985) C: NFRC | Jun – E Jul | M | – | – |
| 121 | * | R | *Glyphipterix sistes* Heppner, 1985<br>T: Heppner (1985)<br>L: None C: NFRC | Apr | – | B | – |
| 122 | * | R | *Glyphipterix juncivora* Heppner, 1985<br>T: Heppner (1985)<br>L: Heppner (1985) C: CNC | Jul – Aug | M | – | – |
| 123 | | R | *Glyphipterix montisella* Chambers, 1875<br>T: Heppner (1985)<br>L: Pohl et al. (2005) C: NFRC | Jul – Aug | M | – | g |

## *22. Bedelliidae – bedelliid moths*

Small (approximately 10 mm wingspan) moths with narrow lanceolate wings. Adults have a tuft of scales on the vertex, and a dense pecten of scales on the antennal scape, not quite forming an eye cap, as in the Lyonetiidae. They are differentiated from other yponomeutoid families by internal and wing venation characters. Larvae are leafminers.

Until recently this group was treated as a subfamily within the Lyonetiidae; we follow Dugdale et al. (1999) in treating it at the family level. Eighteen species of Bedelliidae are known worldwide, all in the genus *Bedellia*. Fourteen of these are restricted to Hawaii, and two species are known from continental North America; one of the latter has re-

cently been found in AB. There is no recent species-level taxonomic work on the group, but the AB species was illustrated by Parenti (2000) and Powell and Opler (2009).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 124 | * | R | *Bedellia somnulentella* (Zeller, 1847) | Aug | – | b | g |
| | | | T: Parenti (2000), Powell and Opler (2009) | | | | |
| | | | L: None C: CNC | | | | |

### 23. Lyonetiidae – lyonetiid moths

Minute (4–11 mm wingspan) moths with narrow lanceolate wings. Adults have an enlarged first antennal segment, which forms an eye cap, and they often have a large tuft of scales on the vertex of the head. Externally, they are very similar to gracillariids and bucculatricids, but can be distinguished by the head, which is dorsoventrally flattened, rather than round (in gracillariids) or triangular and hypognathous (in bucculatricids). Larvae are leafminers or twig miners.

Approximately 210 species of lyonetiids are known worldwide, from all regions. Twenty-two species are known in North America; two of these are known from AB, and other species will likely be discovered in the province as well. The group is in need of revision; the only taxonomic work in the past 50 years is by Schmitt et al. (1996), who dealt with one species.

#### Lyonetiinae

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 124.1 | * | P | *Lyonetia saliciella* Busck, 1904 | M Jun – E Aug | M | – | – |
| 125 | * | R | *Lyonetia prunifoliella* Hübner, 1796 | L May – L Jul | – | B | g |
| | | | T: Schmitt et al. (1996) | | | | |
| | | | L: ?Schmitt et al. (1996), Pohl et al. (2004b) C: NFRC | | | | |
| 126 | * | R | *Paraleucoptera albella* (Chambers, 1871) | Jun – Jul | – | b | g |
| | | | Cottonwood Leafminer | | | | |
| | | | L: None C: NFRC | | | | |

## Gelechioidea

### 24. Elachistidae – concealer moths

A diverse assemblage of groups previously given status as a number of separate families or assigned to other families. They are united on the basis of abdominal and pupal structures (Hodges 1999a). Approximately 1200 species of Elachistidae are known worldwide; 309 species have been reported from North America, 56 of which are reported from AB.

#### 24.1. Ethmiinae

Small (20–30 mm wingspan) moths with long, broadly rounded wings, the forewings often strikingly marked with black spots on a white and/or gray background. Adults of many species are diurnal. At rest, they hold their wings closed and rolled tightly over

the abdomen. Larvae of most species are external feeders on Boraginaceae or Hydrophyllaceae. Most are host-specific at the genus level.

The subfamily Ethmiinae contains approximately 250 species worldwide, concentrated in the Neotropics and southwestern North America. Fifty-five species are known in North America; three of these are reported from AB. This group has been given family status in the past, but its position within the Elachistidae is now widely accepted. They are a well known group in North America. They were revised for the New World by Powell (1973), with two new species described since, from FL.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 127 | * | R | *Pyramidobela quinquecristata* (Braun, 1921)<br>T: Powell (1973)<br>L: None C: UASM | Aug | M | – | – |
| 128 | * | R | *Ethmia monticola* (Walsingham, 1880)<br>T: Powell (1973)<br>L: Bowman (1951), Powell (1973) C: CNC, NFRC, PMAE, UASM | Jun – Jul | M | – | G |
| 129 | * | R | *Ethmia albicostella* (Beutenmüller, 1889)<br>T: Powell (1973)<br>L: Powell (1973) C: CNC, NFRC | Jun – Jul | M | – | g |

### 24.2. Depressariinae

Small (15–30 mm wingspan) moths with broad, rounded wings. Adults rest with the wings closed and held flat over the abdomen. Diapause is in the adult stage in most species; adults of most species fly very late in the fall and again early in the spring. Larvae are leaftiers, seed feeders, and stem borers in dicots.

Approximately 600 species of Depressariinae are known worldwide. Ninety-seven species are known from North America; 29 of these are reported from AB. The Depressariinae are fairly well known in North America. The group was revised by Clarke (1941) and Hodges (1974). The latter added several new species but included few genitalia illustrations; both works are required to make reliable determinations. In both works, the Depressariinae were considered a subfamily of the Oecophoridae. More recently, they were given the status of family, but Hodges (1999a) placed them within the Elachistidae, an arrangement we follow here.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 130 | | R | *Agonopterix gelidella* (Busck, 1908)<br>T: Hodges (1974)<br>L: Bowman (1951), Prentice (1965), ?Hodges (1974), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul – Aug | M | B | – |
| 131 | | R | *Agonopterix lythrella* (Walsingham, 1889)<br>T: Hodges (1974)<br>L: None C: NFRC, UASM | L Jun – E Aug | – | B | – |
| 132 | | R | *Agonopterix fusciterminella* Clarke, 1941<br>T: Hodges (1974)<br>L: None C: NFRC, UASM | L Apr – L May | M | b | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 133 | * | R | *Agonopterix chrautis* Hodges, 1974<br>T: Hodges (1974)<br>L: Hodges (1974) C: Unknown | L Jul | m | – | – |
| 133.1 | * | P | *Agonopterix sabulella* (Walsingham, 1881)<br>T: Hodges (1974) | L Sep | – | B | – |
| 134 | | R | *Agonopterix rosaciliella* (Busck, 1904)<br>T: Hodges (1974)<br>L: Bowman (1951), ?Hodges (1974) C: UASM | E May – E Jun;<br>L Jul – Oct (H) | – | B | g |
| 135 | * | R | *Agonopterix canadensis* (Busck, 1902)<br>T: Hodges (1974)<br>L: Bowman (1951), ?Prentice (1965) C: CNC, UASM | Apr – Jun;<br>Sep – Oct (H) | m | b | G |
| 136 | * | R | *Agonopterix arnicella* (Walsingham, 1881)<br>T: Hodges (1974)<br>L: None C: CNC | L Jul | M | – | g |
| 137 | * | U | *Agonopterix flavicomella* (Engel, 1907)<br>T: Hodges (1974)<br>L: Bowman (1951) C: ?OLDS, ?UASM | Jul – Sep | m | b | – |
| 138 | | R | *Agonopterix argillacea* (Walsingham, 1881)<br>T: Hodges (1974)<br>L: Bowman (1951), Prentice (1965), ?Hodges (1974)<br>C: CNC, NFRC, OLDS, UASM | Apr – May;<br>Sep – Oct (H) | m | B | – |
| 139 | * | R | *Agonopterix posticella* (Walsingham, 1881)<br>T: Hodges (1974)<br>L: None C: NFRC | Sep | – | – | G |
| 140 | | R | *Depressariodes canella* (Busck, 1904)<br>T: Hodges (1974)<br>L: Bowman (1951), ?Hodges (1974) C: CNC, NFRC | Jun – Jul | M | – | g |
| 141 | | R | *Depressariodes nivalis* (Braun, 1921)<br>T: Hodges (1974)<br>L: Bowman (1951), Hodges (1974) C: NFRC,<br>OLDS, UASM | Jul – Aug | M | – | – |
| 142 | * | R | *Depressariodes hildaella* (Clarke, 1941)<br>T: Hodges (1974)<br>L: Hodges (1974) C: Unknown | E Jul | M | – | – |
| 143 | | R | *Depressariodes ciniflonella* (Lienig and Zeller, 1846)<br>T: Hodges (1974)<br>L: Bowman (1951), ?Hodges (1974), Pohl et al.<br>(2004b) C: CNC, NFRC, UASM | Apr – L May;<br>Sep – Oct (H) | M | B | g |
| 144 | | R | *Depressariodes fulva* (Walsingham, 1882)<br>T: Hodges (1974)<br>L: Bowman (1951), ?Hodges (1974) C: NFRC, UASM | Jul – Aug | – | B | G |
| 145 | | R | *Bibarrambla allenella* (Walsingham, 1882)<br>T: Hodges (1974) | Jun – Jul | m | B | – |

L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 146 | | R | *Semioscopis packardella* (Clemens, 1863) | Apr – E Jun | – | B | g |
| | | | T: Hodges (1974) | | | | |
| | | | L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | | | | |
| 147 | | R | *Semioscopis merriccella* Dyar, 1902 | E May – M May | – | B | g |
| | | | T: Hodges (1974) | | | | |
| | | | L: ?Hodges (1974), Pohl et al. (2005) C: NFRC, UASM | | | | |
| 148 | | R | *Semioscopis inornata* Walsingham, 1882 | Apr – Jun | m | B | g |
| | | | T: Hodges (1974) | | | | |
| | | | L: Bowman (1951), Prentice (1965), Hodges (1974), Pohl et al. (2004b) C: CNC, NFRC, ?OLDS, UASM | | | | |
| 149 | | R | *Semioscopis megamicrella* Dyar, 1902 | Apr – May | – | B | g |
| | | | T: Hodges (1974) | | | | |
| | | | L: Bowman (1951), Hodges (1974) C: NFRC, ?OLDS | | | | |
| 150 | | R | *Semioscopis aurorella* Dyar, 1902 | Apr – May | – | B | g |
| | | | T: Hodges (1974) | | | | |
| | | | L: Bowman (1951), Hodges (1974) C: NFRC, UASM | | | | |
| 151 | | R | *Depressaria atrostrigella* Clarke, 1941 | Sep | – | b | g |
| | | | T: Hodges (1974) | | | | |
| | | | L: Pohl et al. (2005) C: NFRC, UASM | | | | |
| 152 | * | R H | *Depressaria artemisiae* Nickerl, 1864 | L Aug | – | b | G |
| | | | T: Hodges (1974) | | | | |
| | | | L: ?Hodges (1974) C: UASM | | | | |
| 153 | * | R I | *Depressaria pastinacella* (Duponchel, 1838) | Apr – May; | – | B | g |
| | | | Parsnip Webworm | Sep – Oct (H) | | | |
| | | | T: Hodges (1974) | | | | |
| | | | L: ?Hodges (1974) C: NFRC, OLDS, PMAE | | | | |
| 154 | * | R | *Depressaria eleanorae* Clarke, 1941 | Apr – May; | M | B | – |
| | | | T: Hodges (1974) | Aug (H) | | | |
| | | | L: None C: ?UASM | | | | |
| 155 | | R | *Depressaria alienella* Busck, 1904 | Aug – Sep | – | B | g |
| | | | T: Hodges (1974) | | | | |
| | | | L: Bowman (1951), ?Hodges (1974) C: CNC, NFRC, UASM | | | | |
| 156 | * | R | *Depressaria leptotaeniae* Clarke, 1933 | Jul | M | – | – |
| | | | T: Hodges (1974) | | | | |
| | | | L: Bowman (1951), Hodges (1974) C: CNC | | | | |
| 157 | | R | *Nites grotella* (Robinson, 1869) | Aug – Sep | – | b | g |
| | | | Hazel Leaftier | | | | |
| | | | T: Hodges (1974) | | | | |
| | | | L: Bowman (1951) C: NFRC, UASM | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 157.1 | * | P | *Nites atrocapitella* (McDunnough, 1944)<br>T: McDunnough (1944a), Hodges (1974) | Aug | – | B | – |
| 158 | | R | *Nites betulella* (Busck, 1902)<br>Black-dotted Birch Leaftier<br>T: Hodges (1974)<br>L: Bowman (1951), Prentice (1965), ?Hodges (1974), Pohl et al. (2004b) C: CNC, NFRC, UASM | Aug | m | B | – |

### 24.3. Elachistinae – grass miner moths

Minute (6–14 mm wingspan) moths with narrow lanceolate wings. Most species have white forewings with tiny black dots, or black wings boldly marked with white spots. The hindwings have straight sides, a sharp point, and a wide fringe on the trailing margin. Adults of most species are diurnal. Larvae of most species are miners in monocots.

Approximately 250 species of Elachistinae are known worldwide. Species richness is particularly notable in southern Europe and North America. One hundred species are known from North America, mostly in the genus *Elachista*. Twenty-one species are known from AB; many more probably remain to be discovered in this poorly collected group. The North American species have been revised recently by Kaila (1995a, 1995b, 1996, 1997, 1999a, 1999b).

**Elachistini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 159 | * | R | *Perittia cygnodiella* (Busck, 1921)<br>T: Kaila (1995b)<br>L: Kaila (1995b) C: CNC | L May | – | b | g |
| 160 | * | R | *Elachista dasycara* Kaila, 1999<br>T: Braun (1948); Kaila (1999a)<br>L: Braun (1948) C: Unknown | E Jul | – | – | G |
| 161 | * | R H | *Elachista subalbidella* Schlager, 1847<br>T: Kaila (1997)<br>L: None C: NFRC | L Jun | – | b | g |
| 162 | * | R | *Elachista ossuaria* Kaila, 1997<br>T: Kaila (1997)<br>L: Kaila (1997) C: CNC, UASM | L May – M Jul | M | B | g |
| 163 | * | R | *Elachista aspila* Kaila, 1997<br>T: Kaila (1997)<br>L: Kaila (1997) C: CNC | M Jun | – | – | G |
| 164 | | R | *Elachista orestella* Busck, 1908<br>T: Kaila (1997)<br>L: Bowman (1951), Kaila (1997) C: CNC, NFRC, UASM | M Jul – M Aug | M | B | – |
| 165 | * | R | *Elachista aurocristata* Braun, 1921<br>T: Kaila (1997)<br>L: Bowman (1951) C: CNC | M Jun – M Jul | M | – | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 166 | * | R | *Elachista symmorpha* Braun, 1948<br>T: Kaila (1997)<br>L: None C: NFRC | L Jun | – | – | G |
| 167 | * | R | *Elachista aphyodes* Kaila, 1997<br>T: Kaila (1997)<br>L: None C: POHL | M Jun | – | – | G |
| 168 | | R | *Elachista adempta* Braun, 1948<br>T: Kaila (1997)<br>L: Kaila (1997), Pohl et al. (2004b) C: CNC, NFRC | Jul – Aug | – | B | G |
| 168.1 | * | P | *Elachista achrantella* Kaila, 1997<br>T: Kaila (1997) | L Jun | – | – | G |
| 169 | * | R | *Elachista epimicta* Braun, 1948<br>T: Kaila (1997)<br>L: Kaila (1997) C: CNC | L Jun – Jul | M | – | – |
| 170 | * | R | *Elachista virgatula* Kaila, 1997<br>T: Kaila (1997)<br>L: Kaila (1997) C: CNC | M Jul | M | – | g |
| 171 | * | R | *Elachista albicapitella* Engel, 1907<br>T: Braun (1948), Kaila (1999b)<br>L: Pohl et al. (2004b) C: NFRC | L Jul | – | B | – |
| 171.1 | * | P | *Elachista stramineola* Braun, 1921<br>T: Braun (1948), Kaila (1999b) | L Jul | M | – | – |
| 172 | * | R | *Elachista fuliginea* Braun, 1948<br>T: Braun (1948), Kaila (1999b)<br>L: Kaila (1999b) C: MZHF | M Jul | M | – | – |
| 173 | * | R | *Elachista maritimella* McDunnough, 1942<br>T: Braun (1948), Kaila (1999b)<br>L: Pohl et al. (2005) C: NFRC | M Jun – L Jun | m | B | – |
| 174 | * | R | *Elachista curufinella* Kaila, 1999<br>T: Kaila (1999b)<br>L: Kaila (1999b) C: MZHF | E Jul | M | – | – |
| 175 | | R | *Elachista cana* Braun, 1920<br>T: Braun (1948), Kaila (1999b)<br>L: Kaila (1999b) C: CNC, NFRC | M Jun – Aug | – | B | G |
| 176 | * | R | *Elachista aranella* Kaila, 1999<br>T: Kaila (1999b)<br>L: Kaila (1999b) C: CNC | L Jun | – | B | – |
| 177 | * | R | *Elachista neithanella* Kaila, 1999<br>T: Kaila (1999b)<br>L: Kaila (1999b) C: CNC | L Jun – M Jul | – | – | G |
| 178 | * | R | *Elachista pyrrha* Kaila, 1996<br>T: Kaila (1996)<br>L: Kaila (1996) C: CNC | E Jul – M Jul | M | – | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 178.1 | * | P | *Elachista agilis* Braun, 1921<br>T: Kaila (1996) | M Jul | M | – | – |
| 179 | * | R H | *Elachista eleochariella* Stainton, 1851<br>T: Kaila (1996)<br>L: Kaila (1996) C: MZHF | M Jul | M | – | – |

### 24.4. Agonoxeninae – palm moths

Minute to small (8–15 mm wingspan) moths with variously colored wings. Adults run rapidly and hold their wings tightly wrapped around the body when at rest. Larvae are borers, miners, and external feeders on various plants.

Ninety-five species of Agonoxeninae are known worldwide, seven from North America and three from AB. There have been no recent revisions of North American Agonoxeninae, and the group is in need of taxonomic work. Illustrations of some species appeared in Hodges (1978), Covell (1984), Arnett (1993), and Pohl et al. (2005).

**Blastodacnini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 180 | * | R | *Blastodacna bicristatella* (Chambers, 1875)<br>L: None C: NFRC | M May – L May | – | B | g |
| 181 | * | R | *Blastodacna curvilineella* (Chambers, 1872)<br>L: Pohl et al. (2004b, 2005) C: NFRC | Jun | – | B | g |
| 182 | * | R | *Chrysoclista cambiella* (Busck, 1915)<br>L: None C: CNC | M Jul | M | – | – |

### 25. Xyloryctidae – teardrop moths

Small (12–18 mm wingspan) moths with narrow lanceolate wings. Most species have dark wings and rather wide bodies relative to those of other narrow-winged groups. Adults rest with the wings folded around the body in the shape of an elongate teardrop. Many species are diurnal. The larvae of most species construct webs from which they feed on leaves. A few species are miners.

The family Xyloryctidae consists of approximately 1200 described species worldwide. Species richness is particularly notable in arid regions. Forty-two species are known in North America, all in the subfamily Scythridinae, which was considered a separate family before Hodges (1999a). Six species are known to occur in AB. The family was revised for North America by Landry (1991), who estimated that only 10% of Nearctic species had been described.

**Scythridinae**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 183 | * | R | *Scythris eboracensis* (Zeller, 1855)<br>T: Landry (1991)<br>L: Landry (1991) C: CNC | L Jun | – | b | g |
| 183.1 | * | P H | *Scythris inspersella* (Hübner, 1817)<br>T: Landry (1991) | M Jul – E Aug | – | B | g |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 184 | * | R | H | *Scythris noricella* (Zeller, 1843)<br>T: Landry (1991)<br>L: Bowman (1951), Landry (1991) C: CNC | Jul – Sep | – | B | g |
| 185 | | R | | *Scythris immaculatella* (Chambers, 1875)<br>T: Landry (1991)<br>L: Landry (1991) C: CNC | Jul | M | b | – |
| 186 | | R | | *Scythris mixaula* Meyrick, 1916<br>T: Landry (1991)<br>L: Pohl et al. (2005) C: CNC, NFRC, UASM | L Aug – Sep | – | – | G |
| 187 | * | R | | *Landryia impositella* (Zeller, 1855)<br>T: Landry (1991)<br>L: Landry (1991) C: CNC | Jun – Aug | m | b | g |
| 188 | * | R | | *Landryia scintillifera* (Braun, 1927)<br>T: Landry (1991)<br>L: Landry (1991) C: CNC | M Jul – M Aug | – | – | G |

### *26. Glyphidoceridae – glyphidocerid moths*

Small (17–20 mm wingspan) moths with relatively wide wings. Superficially, adults resemble larger gelechiids, such as those of the genus *Filatima*, but can be distinguished by their broad, fan-shaped hindwings. The biology of this family is unknown.

Glyphidocerids were very recently assigned family status (Hodges 1999a). Forty-nine species are known, all in the New World and all in the genus *Glyphidocera*. Eleven species are known in North America, one of which is known from AB. The group is in need of revision; many undescribed species have been collected, and no comprehensive works exist. Individual species have been described recently by Adamski and Brown (1987), Adamski (2000), and Adamski and Metzler (2000).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 189 | * | R | *Glyphidocera hurlberti* Adamski, 2000<br>T: Adamski (2000)<br>L: Pohl et al. (2005) C: NFRC, UASM | L Jun – M Sep | – | b | g |

### *27. Oecophoridae – oecophorid moths*

Small (10–20 mm wingspan) moths with rounded wings and diverse, often bright coloration. The adults usually hold their wings tentlike above the body when at rest. Larvae of most species feed on dead plant material, fungi, and detritus; one species, *Hofmannophila pseudospretella*, is a household pest of stored products. A few species in the subfamily Stathmopodinae are predatory on scale insects or spider eggs, or are borers or miners in living plants.

The family Oecophoridae was reassessed and restricted by Hodges (1999a), who removed a number of groups, including the Depressariinae and Ethmiinae, which are now placed within the Elachistidae. The Oecophoridae currently consists of approximately 3150 described species worldwide. It is particularly diverse in Australia. In North America, 42 species are known; six of these are reported from AB. Most spe-

cies currently placed in the family were treated in the revisions by Clarke (1941) and Hodges (1974). Both works are required to make reliable identifications, since the latter includes few detailed illustrations.

**Oecophorinae**

***Oecophorini***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 190 | * | R | *Decantha tistra* Hodges, 1974<br>T: Hodges (1974)<br>L: None C: NFRC | E Jun – M Aug | m | b | g |
| 191 | | R | *Brymblia quadrimaculella* (Chambers, 1875)<br>T: Hodges (1974)<br>L: Bowman (1951) C: CNC, NFRC, PMAE, UASM | Jun – Jul | m | B | g |
| 192 | | R | *Denisia haydenella* (Chambers, 1877)<br>T: Hodges (1974)<br>L: Bowman (1951), Hodges (1974) C: CNC, NFRC, UASM | Jun – Jul | M | B | – |
| 193 | | R | *Polix coloradella* (Walsingham, 1888)<br>T: Hodges (1974)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun – Jul | M | B | g |
| 194 | * | U I | *Hofmannophila pseudospretella* (Stainton, 1849)<br>Brown House Moth<br>T: Hodges (1974)<br>L: ?Hodges (1974) C: Unknown | Aug – Sep | – | b | g |
| 195 | | R | *Eido trimaculella* (Fitch, 1856)<br>T: Hodges (1974)<br>L: Bowman (1951) C: NFRC, UASM | M Jun – E Aug | – | B | g |

## 28. Batrachedridae – batrachedrid moths

Small (10–15 mm wingspan) narrow-winged moths. At rest, adults hold their wings tightly wrapped about the body. They are similar superficially to the Gracillariidae and the Coleophoridae. Larvae feed on flowers or seeds, or mine in needles, galls, or leaves.

The family Batrachedridae has been traditionally placed as a subfamily of either the Momphidae or the Coleophoridae, but was given family status by Hodges (1999a). Approximately 100 species are known worldwide. Twenty-four species are known in North America; one of these is reported in AB. Hodges (1966a) revised the family for the New World and covered all but two Nearctic species.

**Batrachedrinae**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 196 | | R H | *Batrachedra praeangusta* (Haworth, 1828)<br>T: Hodges (1966a), Koster and Sinev (2003)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM | Apr – May | m | B | g |

### *29. Coleophoridae – coleophorid moths*

Minute to small (8–15 mm wingspan), narrow-winged moths. Most adults have light-colored or metallic green wings (Coleophorinae), black and white patterned wings (Momphinae), or gray and black wings (Blastobasinae). They are similar superficially to the Gracillariidae and Batrachedridae. Larvae have diverse feedings habits; many are casebearers and feed on leaves, flowers, and seeds (Coleophorinae); others feed on various plant parts or are scavengers. A few are opportunistic predators.

The family Coleophoridae includes several lineages that were recently considered to be separate families. The subfamily Coleophorinae comprises over 1000 described species, primarily in the genus *Coleophora*. The subfamily Momphinae comprises 60 described species, primarily in the genus *Mompha*. The subfamily Blastobasinae comprises 300 described species. All three of these subfamilies are particularly diverse in the Nearctic region, and all are in need of revision. Many new species remain to be described, particularly in the subfamily Coleophorinae. Hodges (1999a) reported that only 20%–25% of Nearctic species had been described. A fourth subfamily, the Pterolonchinae, comprises eight species, all from the Old World; one has been introduced to North America as a biological control agent of knapweed (*Centaurea* spp.; Compositae). Two hundred and sixty-seven species of Coleophoridae are known in North America; 39 species are reported in AB. Few AB specimens have been examined in detail by experts, so the fauna is poorly known. Few recent taxonomic works exist for the Coleophoridae. Landry and Wright (1993) revised the metallic green *Coleophora*; McDunnough (1958) and J.-F. Landry (1998a) provided many excellent illustrations of several *Coleophora* species. Adamski and Brown (1989) provided a higher-level systematic treatment of the Blastobasinae, and Adamski and Hodges (1996) published a nomenclature review and a checklist for the North American Blastobasinae.

**Coleophorinae – casebearer moths**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 197 | | R | *Coleophora elaeagnisella* Kearfott, 1908<br>L: Bowman (1951) C: CNC, UASM | Jun – Jul | M | – | g |
| 198 | * | R | *Coleophora rosaefoliella* Clemens, 1864<br>T: J.-F. Landry (1998a)<br>L: Pohl et al. (2005) C: UASM | Jun | – | b | g |
| 199 | | R | *Coleophora pruniella* Clemens, 1861<br>Cherry Casebearer<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM | Jun – Jul | – | B | g |
| 200 | * | R | *Coleophora salicivorella* McDunnough, 1945<br>L: None C: CNC | ? | m | – | G |
| 201 | * | R | *Coleophora persimplexella* McDunnough, 1955<br>L: Pohl et al. (2004b) C: NFRC | Jun | – | B | – |
| 202 | * | R | *Coleophora accordella* Walsingham, 1882<br>L: None C: CNC | L Jun | M | – | – |
| 203 | * | R | *Coleophora corylifoliella* Clemens, 1861<br>L: Pohl et al. (2004b) C: NFRC | L Jul | – | B | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 204 | * | R | *Coleophora alnifoliae* Barasch, 1934<br>L: Pohl et al. (2004b) C: CNC, NFRC | M Jun | – | B | – |
| 205 | * | R | *Coleophora comptoniella* (McDunnough, 1926)<br>Birch Casebearer<br>L: Pohl et al. (2004b) C: CNC, NFRC | Jun – Jul | – | B | – |
| 206 | * | R | *Coleophora rosaevorella* McDunnough, 1946<br>L: Pohl et al. (2004b) C: CNC, NFRC | M Jul | – | B | – |
| 207 | | R | *Coleophora acutipennella* Walsingham, 1882<br>L: Bowman (1951) C: CNC, UASM | Jun | M | – | – |
| 208 | * | R | *Coleophora rosacella* Clemens, 1864<br>L: None C: CNC | E Jul | – | – | G |
| 209 | * | R | *Coleophora mcdunnoughiella* Oudejans, 1971<br>L: Pohl et al. (2004b) C: CNC, NFRC | M Jun | – | B | – |
| 210 | * | U | *Coleophora crinita* Braun, 1921<br>L: Bowman (1951) C: Unknown | Jun | M | – | – |
| 211 | * | R | *Coleophora duplicis* Braun, 1921<br>L: Pohl et al. (2004b) C: CNC, NFRC | L Jul – E Aug | – | B | – |
| 212 | * | R | *Coleophora dextrella* Braun, 1940<br>L: Pohl et al. (2004b) C: CNC, NFRC | L Jul | – | B | – |
| 213 | * | R | *Coleophora detractella* McDunnough, 1961<br>L: None C: CNC | L Jun – M Jul | – | – | G |
| 213.1 | * | P | *Coleophora prepostera* Braun, 1923<br>T: Braun (1923) | Jul | M | – | – |
| 214 | * | R | *Coleophora sparsipulvella* Chambers, 1877<br>L: None C: CNC | E Jul – E Aug | M | – | G |
| 215 | * | U | *Coleophora tenuis* Walsingham, 1882<br>L: Bowman (1951) C: Unknown | Jun | M | – | – |
| 216 | | R | *Coleophora brunneipennis* Braun, 1921<br>L: Bowman (1951) C: CNC, UASM | Jun – Jul | – | B | G |
| 217 | * | R | *Coleophora bidentella* McDunnough, 1941<br>L: None C: CNC | M Jun | M | – | – |
| 218 | * | R | *Coleophora glissandella* McDunnough, 1942<br>L: None C: CNC | E Jun | – | – | G |
| 219 | * | R | *Coleophora glaucicolella* Wood, 1892<br>L: Pohl et al. (2004b) C: CNC, NFRC | L Jul | – | B | – |
| 220 | * | R | *Coleophora maritella* McDunnough, 1941<br>T: Landry and Wright (1993)<br>L: None C: NFRC | Jun | – | B | g |
| 221 | * | R I | *Coleophora mayrella* (Hübner, 1813)<br>T: Landry and Wright (1993)<br>L: Bowman (1951), Landry and Wright (1993), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun – Aug | M | B | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 222 | * | R I | *Coleophora trifolii* (Curtis, 1832)<br>T: Landry and Wright (1993)<br>L: Landry and Wright (1993) C: CNC, NFRC, OLDS | Jun – Jul | m | B | g |
| 223 | * | R I | *Coleophora deauratella* Lienig and Zeller, 1846<br>T: Landry and Wright (1993)<br>L: None C: CNC, NFRC | Jun – Jul | – | b | g |

**Momphinae**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 224 | | R | *Mompha albapalpella* (Chambers, 1875)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – Jul | M | B | – |
| 225 | | R | *Mompha claudiella* Kearfott, 1907<br>L: Bowman (1951) C: NFRC, UASM | Jul | – | B | g |
| 226 | * | R | *Mompha definitella* (Zeller, 1873)<br>T: Hodges (1978)<br>L: None C: NFRC, UASM | E Sep | – | – | G |
| 227 | * | R | *Mompha eloisella* (Clemens, 1860)<br>L: None C: CNC | L Jun | – | – | G |
| 228 | * | R | *Mompha stellella* Busck, 1906<br>L: None C: UASM | Aug | – | – | G |
| 229 | * | R | *Mompha unifasciella* (Chambers, 1876)<br>T: Forbes (1923)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Jan – Dec | – | B | g |
| 230 | * | R H | *Mompha idaei* (Zeller, 1839)<br>T: Sinev (1996), Koster and Sinev (2003)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Jun – Jul | M | B | g |
| 231 | * | R H | *Mompha terminella* (Westwood, 1851)<br>T: Koster and Sinev (2003)<br>L: Pohl et al. (2004b) C: NFRC | Jun – Jul | – | B | – |
| 232 | * | R H | *Mompha raschkiella* (Zeller, 1838)<br>T: Koster and Sinev (2003)<br>L: None C: BIRD, POHL | Jul | – | B | – |
| 232.1 | * | P H | *Mompha sexstrigella* (Braun, 1921)<br>T: Sinev (1996), Koster and Harrison (1997), Koster and Sinev (2003) | Jul – Aug | M | – | – |

**Blastobasinae**

**Holcocerini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 233 | | R | *Holcocera immaculella* McDunnough, [1930]<br>T: McDunnough (1929b), Adamski and Hodges (1996)<br>L: Prentice (1965) C: CNC, NFRC | Jun | M | B | – |

**Blastobasini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 234 | * | R | *Hypatopa insulatella* (Dietz, 1910)<br>T: Adamski and Hodges (1996)<br>L: None C: BIRD | E Aug | – | b | g |
| 235 | | R | *Hypatopa titanella* McDunnough, 1961<br>T: Adamski and Hodges (1996)<br>L: Pohl et al. (2004b) C: NFRC | Jul | – | B | g |

## 30. Autostichidae – autostichid moths

Small (10–20 mm wingspan) moths with moderately broad, rounded wings. Adults resemble oecophorids and those of many species are brightly colored. Larvae feed on dead and decaying plant and animal material.

The family Autostichidae is a diverse group, containing several subfamilies that have previously been placed in their own families or in the Elachistidae, Oecophoridae, or Blastobasinae. They were united by Hodges (1999a) on the basis of genital and wing characters. Approximately 300 species are known, from all parts of the world except the Paleotropical region. Five species are known in North America, all in the subfamily Symmocinae. Two species are known from AB. This family has not been revised, but information on some species is available in Clarke (1941) and Powell (1992).

**Symmocinae**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 236 | * | R | *Oegoconia novimundi* (Busck, 1915)<br>L: [Bowman (1951)] C: UASM | Jun | – | b | g |
| 237 | * | R | *Taygete sylvicolella* (Busck, 1903)<br>L: None C: CNC | M May | – | b | g |
| 237.1 | * | P | *Gerdana caritella* Busck, 1908<br>T: Clarke (1941) | Jul | – | b | – |

## 31. Cosmopterigidae – cosmet moths

Small (10–18 mm wingspan) moths, most with moderately narrow lanceolate wings. Some species have metallic markings on the forewings. Adults of most species have been collected at lights, but a few are diurnal or crepuscular. Larvae of most species are leafminers, flower bud feeders or seed feeders, or miners and gall formers on stems and roots. A few species are scavengers or predators on scale insects.

The family Cosmopterigidae comprises over 1200 described species from all parts of the world. This family is particularly diverse in Hawaii. In continental North America, 183 species are known. Five species are reported from AB, and a few others may occur here as well. Hodges (1978) revised the family for North America; three additional species have been recognized or reported since then.

**Cosmopteriginae**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 237.2 | * | P | *Cosmopterix gemmiferella* Clemens, 1860<br>T: Hodges (1978) | Jul | – | b | g |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 238 | * | R | *Cosmopterix fernaldella* Walsingham, 1882<br>T: Hodges (1978)<br>L: None C: NFRC | Jul | – | b | g |
| 239 | * | S I | *Eteobalea intermediella* (Riedl, 1966)<br>T: Koster and Sinev (2003), Mitchell et al. (2005a)<br>L: DeClerck-Floate and Harris (2002), ?Weeden et al. (2002) C: NFRC | Jun – Sep | – | b | g |
| 240 | * | S I | *Eteobalea serratella* (Treitschke, 1833)<br>T: Koster and Sinev (2003), Mitchell et al. (2005a)<br>L: DeClerck-Floate and Harris (2002), McClay and DeClerck-Floate (2002), ?Weeden et al. (2002) C: NFRC | Jul – Aug | – | b | g |
| 241 | | R H | *Limnaecia phragmitella* Stainton, 1851<br>T: Hodges (1978), Koster and Sinev (2003)<br>L: Pohl et al. (2004b) C: CNC, NFRC, OLDS | Jul – Aug | m | B | g |
| **Chrysopeleiinae** | | | | | | | |
| 242 | * | R | *Walshia miscecolorella* (Chambers, 1875)<br>Sweetclover Root Borer<br>T: Hodges (1978)<br>L: [Bowman (1951)], Hodges (1978) C: CNC, NFRC, UASM | Jun – M Jul | m | b | G |
| 242.1 | * | P | *Sorhagenia baucidis* Hodges, 1969<br>T: Hodges (1978) | Jun – Jul | – | b | g |

## *32. Gelechiidae – gelechiid moths*

A diverse family of moths with upturned palps, and with hindwings having a sinuate distal margin with the tip often extended into a sharp point. Most adults are drably marked with mottled brown, black, and white scales, but a few are brightly colored. Most species are active at night. Larvae of most species are leafrollers or leaftiers; a few species are seed feeders, leafminers and needleminers, or stem and root gall formers.

The family Gelechiidae is a large, poorly known group, probably the most poorly known large family of Lepidoptera in North America: Hodges (1999a) estimated that only 30% of species had been described. Approximately 2500 species are known worldwide. Lee et al. (2009) published a checklist of the North American Gelechiidae listing 886 species; 121 of these are reported herein from AB.

### *32.1. Gelechiinae*

Minute to small (8–25 mm wingspan) moths with typical features of the family as described above.

The subfamily Gelechiinae comprises the majority of described species of Gelechiidae. The taxonomic state of this subfamily is poor, with many genera inadequately delimited and unrevised. Many species have not been adequately described or illustrated,

so they are difficult or impossible to identify without examination of type material. Approximately 3500 species are known worldwide, 797 of which are known from North America. One hundred and ten species are reported from AB. Many more species undoubtedly occur in this province that have not been collected or have been collected but remain unidentified or misidentified in collections. Genera that are fairly well known are *Caryocolum* (Huemer 1988), *Bryotropha* (Rutten and Karsholt 2004), *Chionodes* (Hodges 1999b), *Coleotechnites* (Freeman 1960, 1962, 1963, 1965), *Deltophora* (Sattler 1979), *Filatima* (in part, Clarke 1947; Hodges and Adamski 1997), *Gnorimoschema* and related genera (Povolný 1967, 1998a, 1998b, 1998c, 1998d, 2000; Miller 2000; Powell and Povolný 2001), and *Prolita* and related genera (Hodges 1966b). The tribe Teleiodini has been revised recently at the genus level (Lee and Brown 2008).

**Anomologini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 243 | * | R I | *Metzneria lappella* (Linnaeus, 1758)<br>T: Englert (1974)<br>L: None C: CNC, NFRC, UASM | Jul | m | b | G |
| 243.1 | * | P I | *Metzneria paucipunctella* Zeller, 1839<br>T: Englert (1974) | Jun | – | – | g |
| 244 | * | R | *Isophrictis magnella* (Busck, 1903)<br>L: None C: CNC | E Aug | – | – | G |
| 244.1 | * | P | *Isophrictis rudbeckiella* Bottimer, 1926 | Jul | – | – | G |
| 245 | * | R | *Monochroa harrisonella* (Busck, 1904)<br>L: None C: CNC | Jul | M | – | – |
| 246 | * | R I | *Chrysoesthia drurella* (Fabricius, 1775)<br>L: None C: CNC, NFRC | Jul | – | b | g |
| 247 | * | U I | *Chrysoesthia lingulacella* (Clemens, 1860)<br>L: Bowman (1951) C: ?UASM | Jul | – | b | g |
| 248 | * | R | *Aristotelia devexella* Braun, 1925<br>T: Braun (1925)<br>L: Braun (1925), Bowman (1951) C: CNC, NFRC | Jul – E Sep | M | – | g |
| 249 | | R | *Aristotelia fungivorella* (Clemens, 1864)<br>L: Bowman (1951) C: NFRC, UASM | Jul – Sep | M | B | g |
| 250 | | R | *Aristotelia roseosuffusella* (Clemens, 1860)<br>L: Bowman (1951) C: NFRC, UASM | Jul – M Aug | – | B | g |
| 251 | * | R | *Aristotelia rubidella* (Clemens, 1860)<br>L: Bowman (1951) C: CNC | Jun | M | – | – |
| 252 | * | R | *Deltophora sella* (Chambers, 1874)<br>T: Sattler (1979)<br>L: None C: CNC | Jul – Aug | – | – | G |

**Litini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 253 | * | R | *Agnippe prunifoliella* (Chambers, 1873)<br>L: Bowman (1951) C: UASM | May | – | b | g |

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|---|---|---|---|---|---|---|---|
| 253.1 | * | P | *Coleotechnites ardas* (Freeman, 1960)<br>T: Freeman (1960) | L Jun | M | – | – |
| 254 | | R | *Coleotechnites atrupictella* (Dietz, 1900)<br>T: McLeod (1962)<br>L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, UASM | L Jul – E Sep | M | B | – |
| 255 | * | R | *Coleotechnites biopes* (Freeman, 1960)<br>T: Freeman (1960)<br>L: None C: CNC, NFRC | Jul | M | – | – |
| 256 | * | U | *Coleotechnites blastovora* (McLeod, 1962)<br>T: McLeod (1962)<br>L: Pohl et al. (2004b) C: ?NFRC, ?OLDS, ?UASM | M Jul – L Aug | – | B | g |
| 257 | | R | *Coleotechnites canusella* (Freeman, 1957)<br>Banded Jack Pine Needleminer<br>T: Freeman (1960)<br>L: Prentice (1965) C: CNC, NFRC | M Jun – L Jun | – | B | – |
| 258 | | R | *Coleotechnites florae* (Freeman, 1960)<br>T: Freeman (1960)<br>L: Freeman (1960), Pohl et al. (2004b) C: CNC, NFRC | Jul | M | B | – |
| 259 | * | R | *Coleotechnites gibsonella* (Kearfott, 1907)<br>L: Bowman (1951) C: UASM | Jul – Aug | – | B | g |
| 260 | | R | *Coleotechnites laricis* (Freeman, 1965)<br>Orange Larch Tubemaker<br>T: Freeman (1965)<br>L: Pohl et al. (2005) C: NFRC | May – Jul | m | B | – |
| 261 | * | R | *Coleotechnites lewisi* (Freeman, 1960)<br>T: Freeman (1960)<br>L: Freeman (1960) C: CNC | E Jul – M Jul | M | – | – |
| 262 | | R | *Coleotechnites milleri* (Busck, 1914)<br>Lodgepole Needleminer<br>T: Freeman (1960)<br>L: Bowman (1951) C: UASM | Jul | M | – | – |
| 262.1 | * | P | *Coleotechnites occidentis* (Freeman, 1965)<br>T: Freeman (1965) | L Jun | M | – | – |
| 263 | | R | *Coleotechnites piceaella* (Kearfott, 1903)<br>Orange Spruce Needleminer<br>T: McLeod (1962)<br>L: Prentice (1965), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC | May – L Jul | – | B | – |
| 264 | * | R | *Coleotechnites starki* (Freeman, 1957)<br>T: Freeman (1960)<br>L: Freeman (1960), Prentice (1965), Ives and Wong (1988) C: NFRC | L Jul | M | – | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 265 | | R | *Neotelphusa praefixa* (Braun, 1921)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM | L May – E Aug | M | B | – |
| 266 | | R H | *Xenolechia aethiops* (Humphreys and Westwood, 1845)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM | E May – M Jun | M | B | – |
| 267 | | R | *Xenolechia velatella* (Busck, 1907)<br>L: Pohl et al. (2005) C: NFRC, UASM | L Apr – E Jun | – | b | g |
| 268 | * | R | *Carpatolechia belangerella* (Chambers, 1875)<br>L: Bowman (1951) C: UASM | Jun | – | b | g |
| 269 | * | R H | *Carpatolechia proximella* (Hübner, 1796)<br>L: Pohl et al. (2004b) C: ?NFRC, ?OLDS | Jun | – | B | – |
| **Gelechiini** | | | | | | | |
| 270 | * | R H | *Prolita sexpunctella* (Fabricius, 1794)<br>T: Braun (1925), Hodges (1966b)<br>L: Braun (1925), Bowman (1951), Hodges (1966b)<br>C: CNC, NFRC, UASM | May – Aug | M | B | – |
| 271 | | R | *Prolita variabilis* (Busck, 1903)<br>T: Hodges (1966b)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | Jul – E Sep | m | b | G |
| 272 | * | R | *Prolita barnesiella* (Busck, 1903)<br>T: Hodges (1966b)<br>L: None C: UASM | Aug | – | – | G |
| 273 | | R | *Prolita rectistrigella* (Barnes and Busck, 1920)<br>T: Hodges (1966b)<br>L: Hodges (1966b) C: ?NFRC, ?OLDS | E Sep | – | – | G |
| 274 | | R | *Rifseria fuscotaeniaella* (Chambers, 1878)<br>T: Hodges (1966b)<br>L: None C: CNC | Jun – Sep | m | – | G |
| 275 | * | R H | *Bryotropha plantariella* (Tengström, 1848)<br>T: Rutten and Karsholt (2004)<br>L: Rutten and Karsholt (2004) C: NFRC | Jul – Aug | m | – | G |
| 276 | * | R | *Bryotropha gemella* Rutten and Karsholt, 2004<br>T: Rutten and Karsholt (2004)<br>L: None C: POHL | Jun | – | b | g |
| 277 | * | R H | *Bryotropha similis* (Stainton, 1854)<br>T: Rutten and Karsholt (2004)<br>L: Bowman (1951), Rutten and Karsholt (2004) C: CNC, NFRC | Jun | M | – | – |
| 278 | | R | *Bryotropha hodgesi* Rutten and Karsholt, 2004<br>T: Rutten and Karsholt (2004)<br>L: Rutten and Karsholt (2004) C: CNC | E Jul | – | – | G |

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|---|---|---|---|---|---|---|---|
| 279 | * | R | *Bryotropha altitudophila* Rutten and Karsholt, 2004<br>T: Rutten and Karsholt (2004)<br>L: None C: POHL | L Jun – M Jul | – | – | G |
| 280 | | R | *Gelechia albisparsella* (Chambers, 1872)<br>L: Kearfott (1905), Bowman (1951) C: CNC | Jul | – | – | G |
| 280.1 | * | P | *Gelechia dromicella* Busck, 1910 | L Jul | – | B | – |
| 281 | | R | *Gelechia dyariella* Busck, 1903<br>L: Pohl et al. (2004b) C: CNC, NFRC | M Aug – M Sep | – | B | – |
| 282 | | R | *Gelechia lynceella* Zeller, 1873<br>L: Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – L Jul | – | B | – |
| 283 | | R | *Gelechia mandella* Busck, 1904<br>L: Bowman (1951) C: CNC | Jul | M | – | – |
| 284 | | R | *Gelechia versutella* Zeller, 1873<br>L: Bowman (1951) C: NFRC, UASM | Jul – Sep | M | b | – |
| 284.1 | * | P | *Chionodes iridescens* Clarke, 1947<br>T: Hodges (1999b) | E Jul | – | B | g |
| 284.2 | * | P | *Chionodes abitus* Hodges, 1999<br>T: Hodges (1999b) | Jul | – | – | G |
| 285 | | R | *Chionodes abella* (Busck, 1903)<br>T: Hodges (1999b)<br>L: Bowman (1951) C: UASM | Jun | – | b | g |
| 286 | * | R | *Chionodes kincaidella* (Busck, 1907)<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: CNC | M Jul | – | – | G |
| 287 | * | R | *Chionodes sistrella* (Busck, 1903)<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: CNC, NFRC | E Jul | – | – | G |
| 288 | * | R | *Chionodes landryi* Hodges, 1999<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: CNC, NFRC | M Jul | – | – | G |
| 289 | * | R | *Chionodes fructuaria* (Braun, 1925)<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: CNC | E Jul | – | – | G |
| 290 | | R | *Chionodes ochreostrigella* (Chambers, 1875)<br>T: Hodges (1999b)<br>L: Bowman (1951) C: UASM | Jul | M | – | – |
| 290.1 | * | P | *Chionodes salicella* Sattler, 1967<br>T: Hodges (1999b) | L Jul – Aug | M | – | – |
| 291 | * | R | *Chionodes obscurusella* (Chambers, 1872)<br>Boxelder Leafworm<br>T: Hodges (1999b) | L Jun – M Aug | – | b | g |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Ives and Wong (1988) C: NFRC, OLDS, UASM | | | | | |
| 292 | | R | *Chionodes mediofuscella* (Clemens, 1863) T: Hodges (1999b) L: Bowman (1951), Hodges (1999b), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L May – E Jul | – | B | g |
| 293 | | R | *Chionodes terminimaculella* (Kearfott, 1908) T: Hodges (1999b) L: Bowman (1951), Hodges (1999b), Pohl et al. (2004b) C: CNC, NFRC, UASM | M May – E Jul | – | B | g |
| 294 | * | R | *Chionodes innox* Hodges, 1999 T: Hodges (1999b) L: Hodges (1999b) C: CNC | M Jun; M Sep (H) | – | – | G |
| 295 | | R | *Chionodes fondella* (Busck, 1906) T: Hodges (1999b) L: Bowman (1951) C: UASM | L May – E Jul | – | b | g |
| 296 | | R H | *Chionodes lugubrella* (Fabricius, 1794) T: Hodges (1999b) L: Bowman (1951), Hodges (1999b), Pohl et al. (2004b) C: CNC, NFRC, UASM | L Jun – E Aug | M | B | – |
| 297 | * | R | *Chionodes ceanothiella* (Busck, 1904) T: Hodges (1999b) L: Hodges (1999b) C: CNC | M Jun – L Jul | M | – | – |
| 298 | | R | *Chionodes grandis* Clarke, 1947 T: Hodges (1999b) L: Hodges (1999b) C: CNC | E Jul – L Aug | – | – | G |
| 299 | * | R H | *Chionodes praeclarella* (Herrich-Schäffer, 1854) T: Hodges (1999b) L: Bowman (1951), Hodges (1999b) C: CNC, UASM | L May – M Aug | – | b | G |
| 300 | * | R | *Chionodes psiloptera* (Barnes and Busck, 1920) T: Hodges (1999b) L: Bowman (1951), Hodges (1999b), Pohl et al. (2004b) C: CNC, NFRC, UASM | L May – L Jul | M | B | g |
| 301 | * | R | *Chionodes agriodes* (Meyrick, 1927) T: Hodges (1999b) L: Hodges (1999b) C: CNC | L May – M Jun | – | – | G |
| 302 | * | R | *Chionodes whitmanella* Clarke, 1942 T: Hodges (1999b) L: Hodges (1999b) C: CNC | L Aug | – | – | G |
| 303 | * | R | *Chionodes praeco* Hodges, 1999 T: Hodges (1999b) L: Hodges (1999b) C: CNC | L Jul – E Aug | M | – | G |
| 304 | * | R | *Chionodes occlusa* (Braun, 1925) T: Braun (1925), Hodges (1999b) | M Jun – E Jul | m | B | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: Braun (1925), Bowman (1951), Hodges (1999b), Pohl et al. (2004b) C: CNC, NFRC | | | | |
| 305 | | R | *Chionodes boreas* Hodges, 1999<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: CNC, NFRC | E Jul – E Aug | M | B | – |
| 306 | | R | *Chionodes trico* Hodges, 1999<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: CNC | L Jun – M Aug | M | – | – |
| 306.1 | * | P | *Chionodes veles* Hodges, 1999<br>T: Hodges (1999) | Jul | M | – | – |
| 307 | | R H | *Chionodes viduella* (Fabricius, 1794)<br>T: Hodges (1999b)<br>L: Bowman (1951), Hodges (1999b) C: CNC, NFRC, UASM | May – Jun | M | B | – |
| 308 | * | R | *Chionodes ensis* Hodges, 1999<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: CNC | L Jul | M | – | – |
| 309 | * | R H | *Chionodes continuella* (Zeller, 1839)<br>T: Hodges (1999b)<br>L: Bowman (1951), Prentice (1965), Hodges (1999b), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jun – M Jul | M | B | – |
| 310 | | R | *Chionodes sattleri* Hodges, 1999<br>T: Hodges (1999b)<br>L: Hodges (1999b), Pohl et al. (2004b) C: CNC, NFRC, OLDS | L Jun – M Aug | – | B | – |
| 311 | * | R | *Chionodes offectus* Hodges, 1999<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: USNM | L Jul – E Aug | M | – | – |
| 312 | * | R | *Chionodes metallica* (Braun, 1921)<br>T: Hodges (1999b)<br>L: Bowman (1951), Hodges (1999b) C: CNC, UASM | M Jun – E Jul | M | – | G |
| 313 | | R | *Chionodes praecia* Hodges, 1999<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: CNC | E Jun – E Jul | M | – | G |
| 314 | * | R | *Chionodes nigrobarbata* (Braun, 1925)<br>T: Braun (1925), Hodges (1999b)<br>L: Braun (1925), Bowman (1951), Hodges (1999b) C: CNC | M Jun – E Jul | M | – | – |
| 315 | * | R | *Chionodes braunella* (Keifer, 1931)<br>T: Hodges (1999b)<br>L: Hodges (1999b) C: R. H. Leuschner collection | Jul | M | – | – |
| 316 | * | R | *Chionodes permacta* (Braun, 1925)<br>T: Braun (1925), Hodges (1999b) | L Jun – E Aug | M | – | – |

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|---|---|---|---|---|---|---|---|
| | | | L: Braun (1925), Bowman (1951), Hodges (1999b) C: CNC, UASM | | | | |
| 316.1 | * | P | *Chionodes flavicorporella* (Walsingham, 1882) T: Hodges (1999b) | Aug | m | – | G |
| 317 | | R | *Filatima abactella* (Clarke, 1932) L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun | – | B | g |
| 318 | * | U | *Filatima albicostella* Clarke, 1942 L: None C: ?CNC | M Sep | M | – | – |
| 319 | * | R | *Filatima demissae* (Keifer, 1931) L: None C: CNC, ?UASM | M May | – | b | G |
| 320 | * | R | *Filatima normifera* (Meyrick, 1927) L: None C: CNC | M May | – | b | G |
| 321 | * | R | *Filatima ornatifimbriella* (Clemens, 1864) T: Hodges and Adamski (1997) L: None C: CNC | Aug | M | – | – |
| 322 | * | U | *Filatima serotinella* (Busck, 1903) L: Bowman (1951) C: ?UASM | May | – | b | g |
| 323 | | R | *Filatima striatella* (Busck, 1903) L: Bowman (1951) C: UASM | May | – | b | g |
| 324 | | R | *Filatima xanthuris* (Meyrick, 1927) T: Hodges and Adamski (1997) L: Hodges and Adamski (1997) C: Unknown | ? | M | – | – |
| 325 | | R | *Aroga trialbamaculella* (Chambers, 1875) Red-striped Fireworm L: Bowman (1951) C: UASM | Jun | M | – | – |
| **Gnorimoschemini** | | | | | | | |
| 325.1 | * | P | *Gnorimoschema clavatum* Povolný, 1998 T: Povolný (1998d) | ? | – | – | G |
| 326 | * | R | *Gnorimoschema contrarium* Braun, 1921 L: None C: CNC | M Jul – E Aug | M | – | – |
| 327 | * | R | *Gnorimoschema dudiella* Busck, 1903 L: None C: CNC | L Jul – E Aug | M | – | – |
| 328 | | R | *Gnorimoschema gallaeasterella* (Kellicott, 1878) T: Miller (2000) L: Bowman (1951) C: NFRC, ?OLDS, UASM | Jun – Aug | – | b | g |
| 329 | | R | *Gnorimoschema gallaesolidaginis* (Riley, 1869) T: Miller (2000) L: Bowman (1951) C: UASM | Aug – Sep | – | b | g |
| 330 | * | R | *Gnorimoschema gallaespeciosum* Miller, 2000 T: Miller (2000) | E Aug | – | B | g |

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|---|---|---|---|---|---|---|---|---|
| | | | L: None C: NFRC | | | | | |
| 330.1 | * | P | *Gnorimoschema petiolatum* Povolný, 1998 | ? | – | – | G |
| | | | T: Povolný (1998d) | | | | |
| 331 | * | R | *Gnorimoschema reichli* Povolný, 1998 | Jul - Aug | M | – | – |
| | | | T: Povolný (1998d) | | | | |
| | | | L: None C: NFRC | | | | |
| 331.1 | * | P | *Gnorimoschema segregatum* Povolný, 1998 | ? | – | – | G |
| | | | T: Povolný (1998d) | | | | |
| 332 | | R | *Gnorimoschema septentrionella* Fyles, 1911 | L Jul – Aug | – | B | g |
| | | | T: Miller (2000) | | | | |
| | | | L: Pohl et al. (2004b) C: NFRC, UASM | | | | |
| 332.1 | * | P | *Gnorimoschema spinosum* Povolný, 1998 | ? | – | – | G |
| | | | T: Povolný (1998d) | | | | |
| 333 | | R | *Gnorimoschema triocellella* (Chambers, 1877) | Jun | M | – | – |
| | | | T: Povolný (1967) | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 334 | | R | *Gnorimoschema vastificum* Braun, 1929 | Jul | – | – | G |
| | | | T: Powell and Povolný (2001) | | | | |
| | | | L: Powell and Povolný (2001), ?Pohl et al. (2004b) C: NFRC, OLDS | | | | |
| 335 | * | U | *Scrobipalpula henshawiella* (Busck, 1903) | M Jun – M Jul | M | – | – |
| | | | T: Povolný (1967) | | | | |
| | | | L: None C: ?CNC | | | | |
| 336 | * | R | *Scrobipalpula lutescella* (Clarke, 1934) | L May | – | b | g |
| | | | T: Povolný (1967), Powell and Povolný (2001) | | | | |
| | | | L: None C: CNC | | | | |
| 337 | * | R H | *Scrobipalpula psilella* (Herrich-Schäffer, 1855) | May – Jun | M | – | g |
| | | | T: Powell and Povolný (2001) | | | | |
| | | | L: Povolný (1998d) C: Unknown | | | | |
| 338 | * | R | *Scrobipalpula radiatella* (Busck, 1904) | Jul | M | – | – |
| | | | L: Bowman (1951) C: CNC | | | | |
| 339 | * | R H | *Scrobipalpa atriplicella* (F. von Röslerstamm, 1839) | May – Jul | – | b | g |
| | | | T: Povolný (1967), Powell and Povolný (2001) | | | | |
| | | | L: Bowman (1951) C: UASM | | | | |
| 339.1 | * | P H | *Scrobipalpa instabilella* (Douglas, 1846) | L Jun | – | – | G |
| | | | T: Povolný (1998d), Powell and Povolný (2001) | | | | |
| 340 | * | R | *Scrobipalpa macromaculata* (Braun, 1925) | E Jul | – | – | G |
| | | | L: None C: CNC | | | | |
| 341 | * | R I | *Scrobipalpa obsoletella* (F. von Röslerstamm, 1841) | Aug | – | b | g |
| | | | T: Povolný (1967), Powell and Povolný (2001) | | | | |
| | | | L: Bowman (1951) C: UASM | | | | |
| 342 | | R | *Agonochaetia conspersa* (Braun, 1921) | Jun | M | – | G |
| | | | L: Bowman (1951) C: UASM | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 343 | * | R H | *Caryocolum pullatella* (Tengström, 1848)<br>T: Huemer (1988)<br>L: Pohl et al. (2005) C: NFRC | L Aug | – | b | g |
| 344 | | R H | *Caryocolum cassella* (Walker, 1864)<br>T: Huemer (1988)<br>L: Pohl et al. (2005) C: NFRC | M Jul – E Aug | – | b | g |
| 345 | * | R | *Scrobipalpopsis petrella* (Busck, 1915)<br>T: Povolný (1967)<br>L: Bowman (1951) C: UASM | Jul | M | – | – |
| **Chelariini** | | | | | | | |
| 346 | | R | *Anarsia lineatella* Zeller, 1839<br>Peach Twig Borer<br>L: Bowman (1951) C: UASM | Oct | – | b | g |
| **Anacampsini** | | | | | | | |
| 347 | * | R | *Battaristis concinnusella* (Chambers, 1875)<br>L: None C: NFRC, POHL | M Jun – M Sep | – | B | g |
| 348 | | R | *Anacampsis conclusella* (Walker, 1864)<br>L: Pohl et al. (2004b) C: NFRC | L Jul | – | B | – |
| 349 | | R | *Anacampsis fragariella* Busck, 1904<br>L: None C: NFRC | E Aug | – | B | – |
| 350 | | R | *Anacampsis innocuella* (Zeller, 1873)<br>Dark-headed Aspen Leafroller<br>L: Prentice (1965) C: CNC, NFRC, OLDS | Jul – Aug | m | B | – |
| 351 | | R | *Anacampsis niveopulvella* (Chambers, 1875)<br>Pale-headed Aspen Leafroller<br>L: Bowman (1951), Prentice (1965) C: CNC, NFRC, OLDS, UASM | Jul – Aug | M | B | – |
| 352 | * | R | *Anacampsis paltodoriella* Busck, 1903<br>L: None C: CNC | E Aug | – | – | G |

### *32.2. Pexicopiinae*

Small (approximately 15 mm wingspan) moths with the moderately narrow wings that are typical of most other gelechiid moths. This subfamily is defined by the structure of the internal apodemes connecting the abdomen to the thorax, as well as by larval and pupal characters. The larvae are internal feeders in seeds and seed pods.

The approximately 110 species of Pexicopiinae known worldwide are primarily pantropical in distribution. Four species occur in North America, one of which, a pest of grain in the field and in storage, is reported from AB. There are no recent taxonomic works on this group.

353 * R I *Sitotroga cerealella* (Olivier, 1789) L Jul – b –
Angoumois Grain Moth
L: None C: CNC

### *32.3. Dichomeridinae*

Small (12–18 mm wingspan) moths with moderately slender forewings, broadest near the tip and with a predominantly straight costal margin. The hindwings are broader than the forewings and are not or are only scarcely sinuate near the tip, unlike other gelechiids. The larvae are leaftiers.

Approximately 1000 species of Dichomeridinae are known worldwide, from all areas except New Zealand and Hawaii. Eighty-four species occur in North America, 10 of which are reported from AB. This subfamily is very well known in North America thanks to the revision by Hodges (1986).

354 R *Helcystogramma fernaldella* (Busck, 1903) L May – M Jul M B g
T: Hodges (1986)
L: Bowman (1951), Hodges (1986), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

355 * R *Helcystogramma casca* (Braun, 1925) Jul – – G
T: Hodges (1986)
L: None C: NFRC

356 R *Dichomeris setosella* (Clemens, 1860) May – Aug – b g
T: Hodges (1986)
L: Bowman (1951) C: UASM

357 R *Dichomeris bilobella* (Zeller, 1873) L Jun – M Aug – B g
T: Hodges (1986)
L: Pohl et al. (2005) C: NFRC

358 * R *Dichomeris purpureofusca* (Walsingham, 1882) Jun – Jul M B –
T: Hodges (1986)
L: [Bowman (1951)], Hodges (1986) C: BCSC, CNC

359 R *Dichomeris simpliciella* (Busck, 1904) M Jul – – G
T: Hodges (1986)
L: Hodges (1986) C: CNC, NFRC

360 R *Dichomeris levisella* (Fyles, 1904) L Jun – E Aug M B g
T: Hodges (1986)
L: Bowman (1951), Hodges (1986), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

361 R *Dichomeris leuconotella* (Busck, 1904) Jul – Aug – b g
T: Hodges (1986)
L: Bowman (1951), ?Hodges (1986) C: UASM

362 R *Dichomeris costarufoella* (Chambers, 1874) M Jul – B –

T: Hodges (1986)
L: Pohl et al. (2005) C: NFRC

363 * R *Dichomeris offula* Hodges, 1986 Jul – Aug M B –
T: Hodges (1986)
L: ?Hodges (1986) C: NFRC, UASM

## Zygaenoidea

### *33. Limacodidae – slug caterpillar moths*

Small (12–30 mm wingspan) fuzzy moths with short stout wings. Larvae have abdominal prolegs highly reduced or absent, and move in a manner similar to slugs. Some larvae have urticating hairs. They are external feeders on shrubs and trees, often resting on the undersides of leaves.

Approximately 1000 species of Limacodidae have been described globally. Forty-nine species are known from North America, one of which is known from AB. The family is in need of revision, as no taxonomic works have been published since the original descriptions of species, most of which appeared more than 100 years ago. The sole species reported from AB was illustrated by Covell (1984) and Powell and Opler (2009).

**Limacodinae**

364 R *Tortricidia testacea* Packard, 1864 Jun – B g
T: Covell (1984), Powell and Opler (2009)
L: Bowman (1951) C: CNC, NFRC, UASM

## Sesioidea

### *34. Sesiidae – clearwing moths*

Small to medium sized (15–40 mm wingspan) moths with narrow wings. In most species the wings are at least partly transparent, with the scales primarily restricted to the veins and wing margins. Adults of many species have brightly colored bodies and are convincing mimics of bees or wasps. These moths are diurnal, and at least some species visit flowers, but they are rarely observed. Most recent collecting has been done with traps baited with synthetic pheromones. Larvae are stem and root borers in woody plants and larger herbs. A few species are pests of ornamental and orchard trees and of berry crop plants.

Over 1100 species of sesiids are known worldwide, including 128 species from North America; 26 species are reported from AB. The family is fairly well known in North America; Eichlin and Duckworth (1988) revised the entire family, and five more species have been added since then.

**Tinthiinae**

**Tinthiini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 365 | * | R | *Zenodoxus canescens* Edwards, 1881<br>T: Eichlin and Duckworth (1988)<br>L: None C: CNC | Oct | – | – | G |
| 366 | * | R | *Zenodoxus sidalceae* Engelhardt, 1946<br>T: Eichlin and Duckworth (1988)<br>L: Eichlin and Duckworth (1988) C: CNC | E Aug | – | – | G |

**Pennisetiini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 367 | | R | *Pennisetia marginatum* (Harris, 1839)<br>Raspberry Crown Borer<br>T: Eichlin and Duckworth (1988)<br>L: Bowman (1951) C: NFRC, OLDS, UASM | Jul – Aug | M | B | g |

**Sesiinae**

**Paranthrenini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 368 | | R | *Paranthrene robiniae* (Edwards, 1880)<br>T: Eichlin and Duckworth (1988)<br>L: [Bowman (1951)], ?Eichlin and Duckworth (1988), Pohl et al. (2005) C: CNC, NFRC, OLDS, UASM | Jun | m | B | g |
| 369 | * | U H | *Paranthrene tabaniformis* (Rottemburg, 1775)<br>T: Eichlin and Duckworth (1988)<br>L: Engelhardt (1946), ?Eichlin and Duckworth (1988) C: Unknown | L May – Aug | – | b | g |
| 370 | | R | *Albuna pyramidalis* (Walker, 1856)<br>T: Eichlin and Duckworth (1988)<br>L: Bowman (1951), Eichlin and Duckworth (1988) C: CNC, NFRC, OLDS, UASM | Jun – Jul | M | B | G |
| 371 | | R | *Euhagena nebraskae* Edwards, 1881<br>T: Eichlin and Duckworth (1988)<br>L: Eichlin and Duckworth (1988) C: CNC, OLDS, UASM | Sep – Oct | – | – | G |

**Sesiini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 372 | | R | *Sesia tibiale* (Harris, 1839)<br>Cottonwood Crown Borer<br>T: Eichlin and Duckworth (1988)<br>L: Eichlin and Duckworth (1988) C: CNC, NFRC, OLDS, UASM | Jul – E Aug | M | B | – |
| 373 | * | R | *Sesia spartani* Eichlin and Taft, 1988 | Jul – Aug | – | B | g |

T: Eichlin and Taft (1988), Bennett et al. (2000)
L: None C: UASM

**Synanthedonini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 374 | * | R | *Synanthedon pictipes* (Grote and Robinson, 1868)<br>Lesser Peachtree Borer<br>T: Eichlin and Duckworth (1988)<br>L: Pohl et al. (2005) C: CNC, UASM | M Jun - L Jul | – | b | g |
| 375 | * | R I? | *Synanthedon tipuliformis* (Clerck, 1759)<br>Currant Borer<br>T: Eichlin and Duckworth (1988)<br>L: Bowman (1951), Eichlin and Duckworth (1988)<br>C: OLDS, UASM | M Jun - E Jul | – | b | G |
| 376 | | R | *Synanthedon fatifera* Hodges, 1962<br>T: Eichlin and Duckworth (1988)<br>L: Pohl et al. (2005) C: CNC, NFRC, UASM | L May – L Jul | – | B | g |
| 377 | * | R | *Synanthedon viburni* Engelhardt, 1925<br>T: Eichlin and Duckworth (1988)<br>L: None C: ?CNC, UASM | Jun | – | B | – |
| 378 | * | R | *Synanthedon arctica* (Beutenmüller, 1900)<br>T: Eichlin and Duckworth (1988)<br>L: None C: UASM | L Jul | M | B | – |
| 379 | | R | *Synanthedon bolteri* (Edwards, 1883)<br>T: Eichlin and Duckworth (1988)<br>L: Eichlin and Duckworth (1988) C: CNC, NFRC, UASM | M Jun - L Jul | – | B | g |
| 380 | * | R | *Synanthedon canadensis* Duckworth and Eichlin, 1973<br>T: Eichlin and Duckworth (1988)<br>L: Eichlin and Duckworth (1988), Macaulay (2008)<br>C: DAM, USNM | Jul | M | – | – |
| 381 | | R H | *Synanthedon culiciformis* (Linnaeus, 1758)<br>T: Eichlin and Duckworth (1988)<br>L: ?Eichlin and Duckworth (1988), Pohl et al. (2005)<br>C: NFRC, UASM | M May – M Jul | – | B | g |
| 382 | | R | *Synanthedon helenis* (Engelhardt, 1946)<br>T: Eichlin and Duckworth (1988)<br>L: Pohl et al. (2005) C: CNC, UASM | L Jun – L Jul | – | B | g |
| 383 | | R | *Synanthedon saxifragae* (Edwards, 1881)<br>T: Eichlin and Duckworth (1988)<br>L: ?Eichlin and Duckworth (1988), Pohl et al. (2005)<br>C: CNC, UASM | M Jun – E Aug | M | – | – |
| 384 | * | R | *Synanthedon albicornis* (Edwards, 1881)<br>Willow Stem Borer | Jul | – | b | g |

T: Eichlin and Duckworth (1988)
L: ?Eichlin and Duckworth (1988) C: UASM

385 * R *Synanthedon proxima* (Edwards, 1881) Jun – Jul – B g
T: Eichlin and Duckworth (1988)
L: Pohl et al. (2005) C: UASM

386 * R *Synanthedon polygoni* (Edwards, 1881) Jun – Aug M – g
T: Eichlin and Duckworth (1988)
L: ?Eichlin and Duckworth (1988) C: [NFRC], [UASM]

387 * R *Synanthedon novaroensis* (Edwards, 1881) Jun – Jul M B –
Douglas-fir Pitch Moth
T: Eichlin and Duckworth (1988)
L: Eichlin and Duckworth (1988) C: CNC, NFRC, PMAE, UASM

388 * U *Synanthedon sequoiae* (Edwards, 1881) Jun – Jul M – –
Sequoia Pitch Moth
T: Eichlin and Duckworth (1988)
L: ?Eichlin and Duckworth (1988) C: Unknown

389 * R *Podosesia syringae* (Harris, 1839) Jun - Jul – b G
Lilac Borer
T: Eichlin and Duckworth (1988)
L: Bowman (1951), Eichlin and Duckworth (1988) C: CNC, UASM

390 * R *Carmenta giliae* (Edwards, 1881) L Jul M – G
T: Eichlin and Duckworth (1988)
L: Eichlin and Duckworth (1988) C: NFRC, UASM

390.1 * P *Carmenta verecunda* (Edwards, 1881) Jul – Aug M – G
T: Eichlin and Duckworth (1988)

## Cossoidea

### *35. Cossidae – carpenterworm moths*

Medium-sized to large (25–70 mm wingspan) stout-bodied moths with mottled wings. Adults resemble sphinx moths in general body form and wing shape. The larvae are wood borers; a few species are pests of trees.

There are approximately 750 species of cossids worldwide. Forty-seven species are known from North America, three of which are reported in AB. This family has not been revised since Barnes and McDunnough (1911). Several species have been described since then, but the 1911 publication covers the known AB species. This family has also been treated in a number of more recent general texts (see "Resources for Lepidopterists" in Part 1, "Introduction and Background Information").

**Cossinae**

| | | | | | | |
|---|---|---|---|---|---|---|
| 391 | R | *Acossus centerensis* (Lintner, 1877)<br>Poplar Carpenterworm<br>T: Barnes and McDunnough (1911)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – E Aug | m | B | g |
| 392 | R | *Acossus populi* (Walker, 1856)<br>Aspen Carpenterworm<br>T: Barnes and McDunnough (1911)<br>L: Barnes and McDunnough (1911), Bowman (1951), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – E Aug | M | B | g |
| 393 | R | *Prionoxystus robiniae* (Peck, 1818)<br>Carpenterworm<br>T: Barnes and McDunnough (1911)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – M Jul | – | B | G |

## Choreutoidea

### *36. Choreutidae – metalmark moths*

Small (10–15 mm wingspan) moths with a scaled proboscis and broad wings, often marked with patches of metallic scales. The adults are diurnal; they run and fly with rapid, jerky movements, and hold the wings elevated above the body when at rest. Larvae of most species are leaftiers, usually of monocots. Some larvae live within stems but are not true borers.

Until recently, the family Choreutidae was associated with the Glyphipterigidae or the Sesiidae, but it is now placed in its own superfamily. Approximately 400 species of choreutids are known worldwide. The family is most diverse in tropical regions. Thirty-two species are known from North America, and nine of these are reported in AB. The family is in need of revision in North America. Heppner (1982, 1991a, 1991b) has revised some tropical groups and has put new manuscript names on specimens in the CNC, but the latter remain unpublished. Currently, specimens can only be identified by comparison with authoritatively determined material, although Dombroskie (2003) is helpful for several AB species.

**Choreutinae**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 394 | * | R | *Anthophila alpinella* (Busck, 1904)<br>T: Dombroskie (2003)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Jun | M | – | – |
| 395 | * | R | *Prochoreutis pernivalis* (Braun, 1921)<br>L: Bowman (1951) C: NFRC, UASM | Jun – Jul | M | b | g |
| 396 | * | R | *Caloreas occidentella* (Dyar, 1900) | Jun – Jul | M | b | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | | | | |
| 397 | * | R | *Caloreas multimarginata* (Braun, 1925)<br>L: Lafontaine and Wood (1997) C: CNC | M Jun – M Sep | M | – | – |
| 398 | * | R | *Caloreas leucobasis* (Dyar, 1900)<br>T: Dombroskie (2003)<br>L: ?Forbes (1923), Bowman (1951) C: UASM | Jun; Sep (H) | M | – | – |
| 399 | * | R | *Tebenna balsamorrhizella* (Busck, 1904)<br>L: Bowman (1951) C: CNC, NFRC | Jul | M | – | – |
| 400 | * | R | *Tebenna onustana* (Walker, 1864)<br>T: Dombroskie (2003)<br>L: Bowman (1951) C: CNC | Jun | M | – | – |
| 401 | * | R H | *Choreutis diana* (Hübner, 1819)<br>T: Dombroskie (2003)<br>L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | Apr – May;<br>Aug – Sep (H) | M | B | – |
| 402 | * | R | *Choreutis* sp. nr. *myllerana* (Fabricius, 1794)<br>L: Bowman (1951) C: NFRC, UASM | Jul | – | b | g |

## Tortricoidea

### *37. Tortricidae – tortricid moths*

A diverse family of moths with stout, often down-turned palps, an unscaled proboscis, and broad wings. Most adults are crepuscular or nocturnal. Larvae are leafrollers or leaftiers, or bore in stems, bark, seeds, and fruit. This is a large, diverse group with many pest species.

Despite the economic importance of the tortricids, their taxonomy is not well known. A world catalog was published recently (Brown 2005), but the higher taxonomy of the group is not settled. The list here follows the scheme presented by Razowski (2008), who provided an excellent morphological overview. Adults of some groups are extremely variable, often with more external variation between color morphs of a species than exists between species. Identification often requires genitalic dissection. Approximately 6000 species of tortricids are known worldwide; 1289 species are known in North America, of which 382 are reported from AB.

#### *37.1. Tortricinae*

Mostly small, but ranging from minute to medium-sized (8–35 mm wingspan) moths with the characteristics of the family, as described above. The antennae have two rings of scales per antennal segment (except in the tribe Sparganothidini). The forewings are generally more broad basally than is the case for other tortricids. Some members of the tribe Archipini (bell moths) have sinuate forewings and are bell shaped when at rest. Larvae of most species are leafrollers; those of the Cochylini are seed, flower, and stem borers, and a few of the Euliini are litter feeders. A few species of the Archipini

feed colonially inside large webbed nests. Many species are serious pests of crops and trees, including the Oblique-banded Leafroller (*Choristoneura rosaceana*), the Spruce Budworm and related species (the *Choristoneura fumiferana* complex), the Large Aspen Tortrix (*Choristoneura conflictana*), and the Omnivorous Leafroller (*Archips purpurana*).

The Tortricinae, as it is presently delineated, is probably a paraphyletic group. It includes the Cochylini, which until recently was considered a separate family. At present approximately 2650 species of Tortricinae are known worldwide. Four hundred and twenty-four species are known from North America, 126 of which are reported in AB. Taxonomic knowledge of the Tortricinae is variable. Razowski (2002) provided information on many Holarctic and introduced species. Almost all of the Tortricini were covered by Razowski (1966); a few species were illustrated better by Obraztsov (1963) and Razowski (2008). The North American Cochylini are not covered very well by modern published literature, although some species were treated by Razowski (1984, 1991, 1997) and Sabourin et al. (2002). A major revision of the group, by E. Metzler and J. Brown, is currently under way. The Cnephasiini have been covered as follows: *Eana* (Obraztsov 1962a), *Cnephasia* (Mutuura 1982a), and *Decodes* (Powell 1980). The Archipini have been treated as a group by Freeman (1958). The genera *Aphelia* (Obraztsov 1959), *Archepandemis* (Mutuura 1978), *Argyrotaenia* (Powell 1960; Obraztsov 1961), *Choristoneura* (Dang 1985, 1992), *Lozotaenia* (Powell 1962b), and *Clepsis* (Razowski 1979a, 1979b) have all been treated more recently. The Sparganothidini are poorly known, although some groups within this tribe have been covered by Powell (1985, 1986). Most of the Euliini have been treated by Brown and Powell (1991, 2000) and Razowski and Becker (2000). In an unpublished thesis, Lambert (1950) treated many species, but some species concepts have changed since then. Although theirs was not a thorough systematic treatment, Pogue and Lavigne (1981) provided useful illustrations and biological information on many species of Tortricinae.

**Tortricini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 403 | * | R | *Acleris albicomana* (Clemens, 1865)<br>T: Razowski (1966), Pogue and Lavigne (1981)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, ?OLDS, UASM | Jul – Aug | M | B | g |
| 404 | * | R | *Acleris curvalana* (Kearfott, 1907)<br>Blueberry Leaftier<br>T: Razowski (1966)<br>L: Bowman (1951) C: NFRC, ?OLDS, UASM | Jul | M | B | g |
| 405 | | R | *Acleris macdunnoughi* Obraztsov, 1963<br>T: Obraztsov (1963), Razowski (1966)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Aug – Sep | – | B | – |
| 406 | | R | *Acleris caliginosana* (Walker, 1863)<br>T: Razowski (1966)<br>L: Bowman (1951), Prentice (1965), Razowski (1966) C: CNC, NFRC, UASM | Apr – May; Oct (H) | M | B | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 407 | | R | *Acleris nivisellana* (Walsingham, 1879)<br>T: Obraztsov (1963), Razowski (1966)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Apr – May;<br>Oct (H) | – | B | g |
| 408 | | R | *Acleris cervinana* (Fernald, 1882)<br>T: Obraztsov (1963), Razowski (1966)<br>L: Bowman (1951), Prentice (1965), Razowski (1966) C: CNC, NFRC, UASM | Jun – Aug | – | B | g |
| 409 | | R | *Acleris subnivana* (Walker, 1863)<br>T: Obraztsov (1963), Razowski (1966)<br>L: Covell (1984) C: NFRC | May – Jun | – | B | – |
| 410 | | R | *Acleris braunana* (McDunnough, 1934)<br>T: Obraztsov (1963), Razowski (1966)<br>L: Bowman (1951), Prentice (1965) C: CNC, NFRC, UASM | May | – | B | – |
| 411 | * | R | *Acleris fuscana* (Barnes and Busck, 1920)<br>Small Aspen Leaftier<br>T: Razowski (1966)<br>L: Bowman (1951), Prentice (1965), [Pohl et al. (2004b)] C: CNC, NFRC, UASM | Apr – May;<br>Aug – Oct (H) | M | B | g |
| 412 | | R | *Acleris semiannula* (Robinson, 1869)<br>T: Obraztsov (1963), Sabourin et al. (1997)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Apr – May;<br>Aug – Oct (H) | M | B | – |
| 413 | | R H | *Acleris implexana* (Walker, 1863)<br>T: Obraztsov (1963), Razowski (1966, 2002, 2008)<br>L: Bowman (1951) C: UASM | May – Jun | – | B | – |
| 414 | | R | *Acleris cornana* (McDunnough, 1933)<br>T: Razowski (1966)<br>L: Bowman (1951), Razowski (1966) C: CNC, UASM | Apr – May;<br>Aug – Oct (H) | – | B | – |
| 415 | | R | *Acleris forbesana* (McDunnough, 1934)<br>T: Razowski (1966)<br>L: Bowman (1951), Prentice (1965), Razowski (1966), Pohl et al. (2004b) C: CNC, NFRC, UASM | Jun – Jul | – | B | – |
| 416 | * | R H | *Acleris schalleriana* (Linnaeus, 1761)<br>T: Obraztsov (1963), Razowski (1966, 2002, 2008)<br>L: Pohl et al. (2004b) C: CNC, NFRC | Sep | – | B | – |
| 417 | | R | *Acleris oxycoccana* (Packard, 1869)<br>T: Razowski (1966)<br>L: Bowman (1951), Razowski (1966) C: NFRC, OLDS, UASM | Apr – Jun;<br>L Aug – Sep (H) | – | B | – |
| 418 | | R H | *Acleris hastiana* (Linnaeus, 1758)<br>T: Obraztsov (1963), Razowski (1966, 2002, 2008) | Apr – May;<br>Sep – Oct (H) | M | B | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Prentice (1965) C: CNC, NFRC, OLDS, UASM | | | | |
| 419 | | R | *Acleris fragariana* Kearfott, 1904<br>T: Razowski (1966)<br>L: Bowman (1951) C: CNC, UASM | Sep | – | b | g |
| 420 | | R | *Acleris celiana* (Robinson, 1869)<br>T: Razowski (1966)<br>L: Bowman (1951), Prentice (1965), Razowski (1966), Pohl et al. (2004b) C: CNC, NFRC, UASM | Apr – May;<br>Sep – Oct (H) | m | B | – |
| 421 | * | R H | *Acleris arcticana* (Guenée, 1845)<br>T: Obraztsov (1963), Razowski (1966, 2002, 2008)<br>L: None C: NFRC | Apr – Jun;<br>Aug – Oct (H) | M | B | – |
| 422 | | R | *Acleris robinsoniana* (Forbes, 1923)<br>T: Obraztsov (1963), Razowski (1966)<br>L: Bowman (1951), Prentice (1965), Razowski (1966) C: CNC, NFRC, UASM | Apr – May;<br>Oct (H) | M | B | – |
| 423 | | R | *Acleris britannia* Kearfott, 1904<br>T: Obraztsov (1963), Razowski (1966)<br>L: Bowman (1951), Razowski (1966), Pohl et al. (2004b) C: CNC, NFRC, UASM | Aug – Oct | M | B | – |
| 424 | * | R H | *Acleris logiana* (Clerck, 1759)<br>Black-headed Birch Leaffolder<br>T: Obraztsov (1963), Razowski (1966, 2002, 2008)<br>L: Bowman (1951), Obraztsov (1963), Prentice (1965), Razowski (1966), Pohl et al. (2004b) C: CNC, NFRC, UASM | Apr – May;<br>Aug – Oct (H) | M | B | – |
| 425 | * | U | *Acleris flavivittana* (Clemens, 1864)<br>T: Razowski (1966)<br>L: None C: ?NFRC | Apr | – | B | – |
| 426 | | R | *Acleris maculidorsana* (Clemens, 1864)<br>T: Obraztsov (1963), Razowski (1966)<br>L: None C: USNM | Apr – May,<br>Sep – Oct (H) | m | B | – |
| 427 | * | R | *Acleris clarkei* Obraztsov, 1963<br>T: Obraztsov (1963), Razowski (1966)<br>L: None C: CNC | Apr | m | b | – |
| 428 | | R | *Acleris minuta* (Robinson, 1869)<br>Yellowheaded Fireworm<br>T: Obraztsov (1963), Razowski (1966)<br>L: Bowman (1951) C: ?NFRC, UASM | May – Jul | M | b | – |
| 429 | * | R | *Acleris paracinderella* Powell, 1964<br>T: Powell (1964a)<br>L: Pohl et al. (2005) C: NFRC | Aug | m | b | – |

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| 430 | * | R | *Acleris gloveranus* (Walsingham, 1879)<br>Western Black-headed Budworm<br>T: Powell (1962a), Obraztsov (1963)<br>L: Powell (1962a) C: CNC | Jul – M Aug | M | – | – |
| 431 | * | R | *Acleris variana* (Fernald, 1886)<br>Eastern Black-headed Budworm<br>T: Powell (1962a)<br>L: Bowman (1951), Powell (1962a), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul – M Aug | M | B | – |
| 432 | | R H | *Acleris maccana* (Treitschke, 1835)<br>T: Obraztsov (1963), Razowski (1966, 2002, 2008)<br>L: Bowman (1951), Prentice (1965) C: CNC, NFRC, OLDS, UASM | Apr – May;<br>Aug – Oct (H) | M | B | – |
| 433 | * | R | *Acleris inana* (Robinson, 1869)<br>T: Razowski (1966), Clarke (1987)<br>L: Bowman (1951), Razowski (1966) C: CNC, UASM | Aug – Sep | – | B | – |
| 434 | | R H | *Acleris scabrana* ([Denis and Schiffermüller], 1775)<br>T: Powell (1964a), Razowski (2002, 2008)<br>L: Bowman (1951), Powell (1964a) C: CNC, NFRC, OLDS, UASM | Apr – May;<br>Sep – Oct (H) | m | B | – |
| 435 | * | R | *Acleris bowmanana* (McDunnough, 1934)<br>T: Razowski (1966)<br>L: Bowman (1951), Prentice (1965), Razowski (1966) C: CNC, ?NFRC, UASM | Apr – May;<br>Sep – Oct (H) | m | B | – |
| 436 | | R | *Acleris nigrolinea* (Robinson, 1869)<br>T: Obraztsov (1963), Razowski (1966)<br>L: Bowman (1951), Prentice (1965), Razowski (1966), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Apr – May;<br>Sep – Oct (H) | M | B | – |
| 437 | | R | *Acleris maximana* (Barnes and Busck, 1920)<br>T: Obraztsov (1963), Razowski (1966)<br>L: Bowman (1951), Prentice (1965), Razowski (1966) C: CNC, ?NFRC, UASM | Apr – May;<br>Sep – Oct (H) | m | B | – |
| 438 | * | R H | *Acleris effractana* (Hübner, 1799)<br>T: Obraztsov (1963), Razowski (1966, 2008)<br>L: [Bowman (1951)], [Prentice (1965)], [Pohl et al. (2004b)] C: CNC, NFRC, UASM | Aug – Sep | M | B | – |
| 439 | | R | *Acleris hudsoniana* (Walker, 1863)<br>T: Razowski (1966)<br>L: Bowman (1951), Prentice (1965) C: CNC, ?NFRC, UASM | Apr – May;<br>Oct (H) | M | B | – |

**Cochylini**

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|---|---|---|---|---|---|---|---|
| 440 | | R | *Phtheochroa aureoalbida* (Walsingham, 1879)<br>T: Razowski (1997)<br>L: Bowman (1951), Razowski (1997) C: CNC, NFRC, UASM | May – Jun | M | – | G |
| 441 | | R | *Phtheochroa baracana* (Busck, 1907)<br>T: Razowski (1991)<br>L: Bowman (1951) C: UASM | Jul | M | b | – |
| 442 | | R | *Phtheochroa cartwrightana* (Kearfott, 1907)<br>T: Razowski (1997)<br>L: None C: CNC | Jul | – | – | G |
| 443 | | R | *Phtheochroa fulviplicana* (Walsingham, 1879)<br>T: Razowski (1997)<br>L: Bowman (1951), Razowski (1997) C: CNC, NFRC, UASM | Jun – Jul | M | b | – |
| 444 | * | U | *Phtheochroa modestana* (Busck, 1907)<br>T: Razowski (1991)<br>L: None C: ?CNC | M Jul – L Jul | M | – | – |
| 445 | * | U | *Phtheochroa villana* (Busck, 1907)<br>T: Razowski (1991)<br>L: None C: ?UASM | Jul | m | B | g |
| 446 | | R | *Phtheochroa vitellinana* (Zeller, 1875)<br>T: Razowski (1997)<br>L: Bowman (1951) C: CNC, NFRC | Jun – Jul | – | B | g |
| 447 | * | R H | *Phtheochroa vulneratana* (Zetterstedt, 1839)<br>T: Razowski (1997, 2002)<br>L: Razowski (1997) C: CNC | Jul – E Aug | M | – | – |
| 448 | | R | *Phtheochroa waracana* (Kearfott, 1907)<br>T: Razowski (1997)<br>L: Bowman (1951), Razowski (1997) C: CNC, NFRC, UASM | M Jun – M Jul | – | B | G |
| 449 | * | R | *Platphalonidia albertae* Razowski, 1997<br>T: Razowski (1997)<br>L: Razowski (1997) C: CNC? | M Jun | M | – | – |
| 450 | * | R | *Platphalonidia dangi* Razowski, 1997<br>T: Razowski (1997)<br>L: Razowski (1997) C: CNC? | M Jun | M | – | – |
| 451 | | R | *Platphalonidia felix* (Walsingham, 1895)<br>T: Razowski (1997)<br>L: Razowski (1997) C: CNC, NFRC, UASM | M Jul – L Aug | – | B | g |
| 452 | * | R | *Platphalonidia imitabilis* Razowski, 1997<br>T: Razowski (1997) | L Jun | M | – | – |

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| | | | L: Razowski (1997) C: CNC? | | | | | |
| 453 | | R | *Platphalonidia lavana* (Busck, 1907)<br>T: Razowski (1997)<br>L: ?Forbes (1923) C: CNC | L Jun – E Sep | – | b | g |
| 454 | * | R | *Aethes biscana* (Kearfott, 1907)<br>T: Razowski (1997)<br>L: None C: POHL, ?UASM | E Jul | – | b | g |
| 455 | | R H | *Aethes deutschiana* (Zetterstedt, 1840)<br>T: Razowski (1997, 2002)<br>L: Bowman (1951), Razowski (1997) C: CNC, NFRC, UASM | L Jun – E Aug | M | – | – |
| 456 | | R | *Aethes monera* Razowski, 1986<br>T: Razowski (1997)<br>L: Razowski (1997) C: NFRC, OLDS | M Jun | – | B | – |
| 457 | * | R | *Aethes promptana* (Robinson, 1869)<br>T: Sabourin et al. (2002)<br>L: None C: NFRC | Jul | – | B | – |
| 458 | * | R h | *Aethes rutilana* (Hübner, 1818)<br>T: Razowski (1997, 2002)<br>L: Ives and Wong (1988), Razowski (1997) C: CNC, NFRC | May – Aug | – | – | G |
| 459 | * | R | *Aethes sexdentata* Sabourin and Miller, 2002<br>T: Sabourin et al. (2002)<br>L: [Bowman (1951)], [Razowski (1997)] C: NFRC | M Jul – M Aug | – | B | – |
| 460 | * | R H | *Aethes smeathmanniana* (Fabricius, 1781)<br>T: Razowski (1997, 2002)<br>L: Razowski (1997) C: CNC, NFRC, ?UASM | Jun – E Aug | M | – | – |
| 461 | * | R H | *Cochylidia subroseana* (Haworth, 1811)<br>T: Razowski (1997, 2002)<br>L: Razowski (1997) C: CNC? | Jul – E Aug | M | – | – |
| 462 | * | R H | *Cochylis dubitana* (Hübner, 1799)<br>T: Razowski (1997, 2002)<br>L: Razowski (1997) C: CNC? | Jun – Jul | M | – | – |
| 463 | * | R | *Cochylis hoffmanana* (Kearfott, 1907)<br>T: Razowski (1997)<br>L: None C: NFRC | L Jun | – | B | – |
| 464 | * | R | *Cochylis hospes* (Walsingham, 1884)<br>T: Razowski (1997)<br>L: None C: JJDC | Jul – Aug | – | – | G |
| 465 | * | R H | *Cochylis nana* (Haworth, 1811)<br>T: Razowski (1997, 2002)<br>L: Razowski (1997), Pohl et al. (2004b) C: CNC, NFRC, UASM | L May – L Jun | – | B | – |

**Cnephasiini**

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|---|---|---|---|---|---|---|---|---|
| 466 | * | R | H | *Eana argentana* (Clerck, 1759)<br>T: Obraztsov (1962a), Pogue and Lavigne (1981), Razowski (2002)<br>L: Bowman (1951), Obraztsov (1962a), Pogue and Lavigne (1981) C: AGRL, CNC, NFRC, OLDS, PMAE, UASM | Jun – Jul | M | B | – |
| 467 | * | R | H | *Eana osseana* (Scopoli, 1763)<br>T: Obraztsov (1962a), Pogue and Lavigne (1981), Razowski (2002)<br>L: Bowman (1951), Obraztsov (1962a), Pogue and Lavigne (1981), Lafontaine and Wood (1997) C: CNC, NFRC, UASM | Jun – Jul | M | B | – |
| 468 | * | R | | *Decodes fragariana* (Busck, 1919)<br>T: Powell (1980)<br>L: None C: UASM | Aug | M | – | – |
| 469 | * | R | | *Decodes horariana* (Walsingham, 1879)<br>T: Powell (1980), Pogue and Lavigne (1981)<br>L: Bowman (1951) C: NFRC, UASM | Sep | M | b | – |
| 470 | * | R | | *Decodes macdunnoughi* Powell, 1980<br>T: Powell (1980)<br>L: None C: UASM | Sep | – | B | – |

**Archipini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 471 | * | R | | *Pandemis limitata* (Robinson, 1869)<br>Three-lined Leafroller<br>T: Freeman (1958), Pogue and Lavigne (1981)<br>L: Prentice (1965) C: CNC, NFRC | Jul – Aug | – | B | g |
| 472 | * | R | | *Pandemis canadana* Kearfott, 1905<br>Green Aspen Leaftier<br>T: Freeman (1958), Pogue and Lavigne (1981)<br>L: Bowman (1951), Freeman (1958), Prentice (1965), Pogue and Lavigne (1981), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | Jul – Aug | – | B | g |
| 473 | * | R | | *Pandemis pyrusana* Kearfott, 1907<br>T: Freeman (1958), Pogue and Lavigne (1981)<br>L: Freeman (1958), Pogue and Lavigne (1981) C: Unknown | Jul – Aug | M | – | – |
| 474 | | R | | *Argyrotaenia velutinana* (Walker, 1863)<br>Red-banded Leafroller<br>T: Freeman (1958), Pogue and Lavigne (1981) | May | M | b | g |

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| | | | L: Bowman (1951), Prentice (1965) C: CNC, NFRC, UASM | | | | |
| 475 | * | R | *Argyrotaenia repertana* Freeman, 1944<br>T: Freeman (1958)<br>L: None C: CNC | M May | – | b | g |
| 476 | | R | *Argyrotaenia pinatubana* (Kearfott, 1905)<br>Pine Tube Moth<br>T: Freeman (1960)<br>L: Bowman (1951), Prentice (1965) C: CNC, NFRC, UASM | May | M | B | – |
| 477 | | R | *Argyrotaenia tabulana* Freeman, 1944<br>Jack Pine Tube Moth<br>T: Freeman (1960)<br>L: Prentice (1965) C: CNC, NFRC | May – E Jun | M | B | – |
| 478 | | R | *Argyrotaenia occultana* Freeman, 1942<br>Fall Spruce Needle Moth<br>T: Freeman (1958)<br>L: Bowman (1951), Freeman (1958), Prentice (1965) C: CNC, NFRC | Jun | M | B | – |
| 479 | | R | *Argyrotaenia quadrifasciana* (Fernald, 1882)<br>Fourlined Leafroller<br>T: Freeman (1958), Pogue and Lavigne (1981)<br>L: Pohl et al. (2005) C: NFRC | Aug | – | b | g |
| 480 | | R | *Argyrotaenia mariana* (Fernald, 1882)<br>Grey-banded Leafroller<br>T: Freeman (1958)<br>L: Pohl et al. (2005) C: NFRC | L May – M Jun | – | B | g |
| 481 | | R | *Choristoneura fractivittana* (Clemens, 1865)<br>Broken-Banded Leafroller<br>T: Freeman (1958), Dang (1992)<br>L: Freeman (1958) C: Unknown | Jun | – | – | g |
| 482 | | R | *Choristoneura zapulata* (Robinson, 1869)<br>T: Pogue and Lavigne (1981), Dang (1992)<br>L: Bowman (1951), Prentice (1965), Dang (1992) C: CNC, NFRC, UASM | Jul | – | b | g |
| 483 | | R | *Choristoneura rosaceana* (Harris, 1841)<br>Oblique-banded Leafroller<br>T: Pogue and Lavigne (1981), Dang (1992)<br>L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun – Aug | M | B | G |
| 484 | | R H | *Choristoneura albaniana* (Walker, 1863)<br>T: Dang (1992), Razowski (2002) | May – Jun | M | B | – |

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| | | | L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM | | | | | |
| 485 | * | R | *Choristoneura conflictana* (Walker, 1863)<br>Large Aspen Tortrix<br>T: Pogue and Lavigne (1981), Dang (1992)<br>L: Bowman (1951), Prentice (1965), Pogue and Lavigne (1981), Dang (1992), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | Jun – Jul | M | B | g |
| 486 | * | R | *Choristoneura fumiferana* (Clemens, 1865)<br>Spruce Budworm<br>T: Freeman (1958), Dang (1985, 1992), Gray et al. (1995), Shepherd et al. (1995)<br>L: Bowman (1951), Prentice (1965), Dang (1985), Shepherd et al. (1995), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul – Aug | M | B | – |
| 487 | * | R | *Choristoneura occidentalis* Freeman, 1967<br>Western Spruce Budworm<br>T: Pogue and Lavigne (1981), Dang (1985), Powell and De Benedictis (1995b), Shepherd et al. (1995)<br>L: Ives and Wong (1988), Powell and De Benedictis (1995b) C: NFRC | Jul – Aug | M | – | – |
| 488 | * | R | *Choristoneura biennis* Freeman, 1967<br>Two-year-cycle Budworm<br>T: Dang (1985), Gray et al. (1995), Shepherd et al. (1995)<br>L: Dang (1985), Ives and Wong (1988), Shepherd et al. (1995), Lafontaine and Wood (1997) C: CNC, NFRC, OLDS | Jul – Aug | M | – | – |
| 489 | * | R | *Choristoneura pinus* Freeman, 1953<br>Jack Pine Budworm<br>T: Freeman (1958), Dang (1985, 1992)<br>L: ?Freeman (1958) C: NFRC | Jul – Aug | – | B | – |
| 490 | * | R | *Choristoneura lambertiana* (Busck, 1915)<br>T: Pogue and Lavigne (1981), Dang (1985), Powell and De Benedictis (1995b), Shepherd et al. (1995)<br>L: Dang (1985), Ives and Wong (1988), Powell and De Benedictis (1995b) C: CNC, NFRC | Jul – Aug | M | – | – |
| 491 | | R | *Archips packardiana* (Fernald, 1886)<br>Spring Spruce Needle Moth<br>T: Freeman (1958)<br>L: Bowman (1951), Prentice (1965) C: CNC, NFRC, OLDS, UASM | Jul | M | B | – |

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| 492 | * | R | *Archips striana* Fernald, 1905<br>T: Freeman (1958), Pogue and Lavigne (1981)<br>L: Bowman (1951), Freeman (1958), Prentice (1965), Pogue and Lavigne (1981) C: CNC, NFRC, OLDS, UASM | Jun – Jul | – | B | g |
| 493 | | R | *Archips alberta* (McDunnough, 1923)<br>T: Freeman (1958)<br>L: Bowman (1951), Freeman (1958) C: CNC, NFRC, OLDS, UASM | Jul – Aug | M | B | – |
| 494 | | R | *Archips dissitana* (Grote, 1879)<br>T: Freeman (1958)<br>L: None C: USNM | L Jul | – | B | – |
| 495 | * | R | *Archips argyrospila* (Walker, 1863)<br>Fruit Tree Leafroller<br>T: Pogue and Lavigne (1981), Kruse and Sperling (2001)<br>L: Bowman (1951), Prentice (1965), Pogue and Lavigne (1981), Kruse and Sperling (2001), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | Jul | – | B | g |
| 496 | | R | *Archips eleagnana* (McDunnough, 1923)<br>T: Freeman (1958)<br>L: Bowman (1951), Freeman (1958) C: CNC, NFRC, UASM | Jul | M | – | – |
| 497 | * | R | *Archips negundana* (Dyar, 1902)<br>Larger Boxelder Leafroller<br>T: Freeman (1958), Pogue and Lavigne (1981)<br>L: None C: CNC, NFRC | Jun – Jul | – | – | G |
| 498 | * | R | *Archips cerasivorana* (Fitch, 1856)<br>Ugly-nest Caterpillar<br>T: Freeman (1958), Pogue and Lavigne (1981)<br>L: Bowman (1951), Prentice (1965) C: CNC, NFRC, OLDS, UASM | Jul – Aug | m | b | G |
| 499 | * | R i? | *Archips purpurana* (Clemens, 1865)<br>Omnivorous Leafroller<br>T: Freeman (1958), Pogue and Lavigne (1981)<br>L: None C: ?CNC, NFRC | Jul | – | b | G |
| 500 | * | U | *Archepandemis borealis* (Freeman, 1965)<br>T: Freeman (1965), Mutuura (1978)<br>L: Freeman (1965) C: ?CNC | Jul – Aug | M | B | – |
| 501 | | R | *Archepandemis coniferana* Mutuura, 1978<br>T: Mutuura (1978)<br>L: Mutuura (1978) C: CNC, NFRC | Jul – Aug | M | b | – |
| 502 | | R | *Syndemis afflictana* (Walker, 1863)<br>T: Freeman (1958) | May – Jul | – | B | – |

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| | | | L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | | | | |
| 503 | * | R | *Lozotaenia hesperia* Powell, 1962<br>T: Powell (1962b)<br>L: Pohl et al. (2005) C: CNC, NFRC | Jun – Jul | m | B | – |
| 504 | * | R | *Aphelia alleniana* (Fernald, 1882)<br>T: Obraztsov (1959), Pogue and Lavigne (1981)<br>L: Bowman (1951), Obraztsov (1959), Prentice (1965), Pogue and Lavigne (1981) C: CNC, NFRC, OLDS, UASM | Jun – Jul | – | B | G |
| 505 | * | R | *Aphelia koebelei* Obraztsov, 1959<br>T: Obraztsov (1959)<br>L: None C: CNC | E Jul – M Jul | M | – | – |
| 506 | * | R | *Clepsis fucana* (Walsingham, 1879)<br>T: Freeman (1958), Razowski (1979a)<br>L: None C: JJDC | L Jun – L Jul | M | – | – |
| 507 | * | R | *Clepsis kearfotti* Obraztsov, 1962<br>T: Obraztsov (1962b), Razowski (1979a)<br>L: Obraztsov (1962b), Razowski (1979a) C: Unknown | M Aug | M | – | – |
| 508 | * | R | *Clepsis persicana* (Fitch, 1856)<br>White-triangle Leafroller<br>T: Freeman (1958), Razowski (1979a), Pogue and Lavigne (1981)<br>L: Bowman (1951), Prentice (1965), Pogue and Lavigne (1981), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | Jun – Jul | M | B | g |
| 509 | | R | *Clepsis clemensiana* (Fernald, 1879)<br>T: Freeman (1958), Razowski (1979a), Pogue and Lavigne (1981)<br>L: Bowman (1951), Razowski (1979a), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul – Aug | – | B | G |
| 510 | | R H | *Clepsis moeschleriana* (Wocke, 1862)<br>T: Freeman (1958), Razowski (1979a, 2002)<br>L: Bowman (1951), Freeman (1958), Razowski (1979a) C: CNC, NFRC, UASM | Aug | M | – | – |
| 511 | | R | *Clepsis melaleucana* (Walker, 1863)<br>T: Freeman (1958), Razowski (1979a)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM | Jul | – | B | g |
| 512 | | R | *Clepsis peritana* (Clemens, 1860)<br>Garden Tortrix<br>T: Freeman (1958), Razowski (1979b)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | Jun – Aug | – | B | g |

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|---|---|---|---|---|---|---|---|
| 513 | | R | *Clepsis virescana* (Clemens, 1865)<br>T: Freeman (1958), Razowski (1979b), Pogue and Lavigne (1981)<br>L: Bowman (1951), Pogue and Lavigne (1981), Pohl et al. (2004b) C: NFRC, OLDS, UASM | Jul | M | B | g |
| 514 | | R | *Adoxophyes negundana* (McDunnough, 1923)<br>T: Freeman (1958), Pogue and Lavigne (1981)<br>L: Prentice (1965) C: CNC, NFRC, OLDS | Jun – Jul | – | b | g |
| 515 | | R | *Xenotemna pallorana* (Robinson, 1869)<br>T: Pogue and Lavigne (1981)<br>L: Bowman (1951), Pogue and Lavigne (1981) C: CNC, UASM | Jul | – | – | G |
| **Sparganothidini** | | | | | | | |
| 516 | | R | *Sparganothis sulfureana* (Clemens, 1860)<br>T: Lambert (1950), Pogue and Lavigne (1981)<br>L: Bowman (1951), Prentice (1965), Pogue and Lavigne (1981) C: NFRC, OLDS, UASM | Jul – Aug | – | B | – |
| 517 | | R | *Sparganothis tristriata* Kearfott, 1907<br>T: Lambert (1950)<br>L: Prentice (1965) C: CNC, NFRC | Jul – Aug | – | B | – |
| 518 | * | R | *Sparganothis xanthoides* (Walker, 1863)<br>T: Lambert (1950)<br>L: Lambert (1950), Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – E Aug | – | B | g |
| 519 | | R | *Sparganothis violaceana* (Robinson, 1869)<br>T: Lambert (1950)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Jun | M | B | g |
| 520 | | R | *Sparganothis unifasciana* (Clemens, 1864)<br>T: Lambert (1950), Pogue and Lavigne (1981)<br>L: Pohl et al. (2005) C: CNC, NFRC, OLDS | Jun – Aug | – | b | G |
| 521 | | R | *Sparganothis vocaridorsana* Kearfott, 1905<br>T: Lambert (1950), Pogue and Lavigne (1981)<br>L: Lambert (1950), Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | Jun – Jul | M | b | G |
| 522 | | R | *Sparganothis reticulatana* (Clemens, 1860)<br>T: Lambert (1950)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul | – | B | g |
| 523 | | R | *Platynota idaeusalis* (Walker, 1859)<br>T: Lambert (1950), Pogue and Lavigne (1981)<br>L: Bowman (1951), Pohl et al. (2004b) C: AGRL, CNC, NFRC, OLDS, UASM | L Jun – E Aug | – | B | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 524 | | R | *Amorbia humerosana* Clemens, 1860<br>T: Lambert (1950)<br>L: Bowman (1951) C: CNC, NFRC, UASM | May | – | B | – |

**Euliini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 525 | | R H | *Eulia ministrana* (Linnaeus, 1758)<br>T: Powell (1964a), Razowski (2002)<br>L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun | – | B | – |
| 526 | * | R | *Anopina ednana* (Kearfott, 1907)<br>T: Pogue and Lavigne (1981), Brown and Powell (2000)<br>L: None C: NFRC | Jun – Jul | M | – | G |
| 527 | * | R | *Anopina arizonana* (Walsingham, 1884)<br>T: Brown and Powell (2000)<br>L: Brown and Powell (2000) C: Unknown | Jun – Aug | M | – | – |
| 528 | | R | *Apotomops wellingtoniana* (Kearfott, 1907)<br>T: Powell (1986), Razowski and Becker (2000)<br>L: Bowman (1951), Prentice (1965) C: CNC, NFRC, UASM | May – Jun | M | – | – |

### *37.2. Olethreutinae*

Minute to small (8–30 mm wingspan) moths with the characteristics of the family, as described above. The antennae have one ring of scales per antennal segment. The forewings are generally narrower basally than in other tortricids. Many species have contrasting or mottled patterns of dark and light bands on their forewings. Most larvae are leafrollers; a few are borers in roots, stems, or fruit. A few species are important pests, including the Codling Moth "(*Cydia pomonella* (Linnaeus, 1758)), a fruit borer.

Approximately 3300 species of Olethreutinae are known worldwide. The family is particularly diverse in southeast Asia and the Holarctic. Eight hundred and sixty-five species are known from North America, 256 of which are reported from AB. Taxonomic knowledge of the group is reasonably good, but much of the work is very old and is inadequately illustrated. Many of the specimens in public collections in Canada have not been examined in detail for many years, so identifications may not be accurate in light of newer taxonomic works. Several undescribed species of Eucosmini have been discovered recently in AB by C. D. Bird and await description. Heinrich (1923, 1926) revised the group as a whole, and those works remain very useful references for many groups. Other good general references covering many AB species are Miller (1987) and Gilligan et al. (2008). Also, Razowski (2003, 2008) provided information on many Holarctic and introduced species. Within the Endotheniini, the article by Diakonoff (1964) is useful for AB species. In the Olethreutini, the genera *Apotomis* (Adamski and Peters 1986) and *Episimus* (Heppner 1994) have been revised; other useful works are those by Miller (1979, 1985a), Jalava and Miller (1998), and Miller and Jalava (2000).

In the Eucosmini, useful works are those by Heinrich (1923, 1924, 1929), McDunnough (1925a, 1938a), Powell (1963, 1964a), Mutuura and Freeman (1966), Miller (1978, 1983c, 1985b, 1986b), Powell and Miller (1978), Brown (1980, 1983, 1984, 1986, 1992), and Wong et al. (1983).

**Endotheniini**

529 R *Endothenia montanana* (Kearfott, 1907) May – Jun – b g
T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)
L: Bowman (1951), Gilligan et al. (2008) C: UASM

530 R *Endothenia heinrichi* McDunnough, 1929 M Apr – M Jul – b g
T: McDunnough (1929a), Gilligan et al. (2008)
L: Bowman (1951) C: CNC, NFRC, UASM

531 * R H *Endothenia hebesana* (Walker, 1863) Jun – Sep M b g
T: Heinrich (1926), Miller (1983a, 1987), Razowski (2003), Gilligan et al. (2008)
L: Heinrich (1926), Bowman (1951) C: CNC, NFRC, UASM

532 * U *Endothenia infuscata* Heinrich, 1923 Jun – b g
T: Heinrich (1926), Gilligan et al. (2008)
L: Bowman (1951) C: ?UASM

533 * R *Endothenia nubilana* (Clemens, 1865) Jun – Jul M B G
T: Heinrich (1926), Miller (1983a, 1987), Gilligan et al. (2008)
L: Heinrich (1926), Bowman (1951), Gilligan et al. (2008) C: CNC, NFRC, PMAE, UASM

534 * R *Taniva albolineana* (Kearfott, 1907) Jun – Jul M B g
Spruce Needleminer
T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)
L: Heinrich (1926), Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: NFRC, OLDS, UASM

535 * R H *Tia enervana* (Erschoff, 1877) Jun M – –
T: Heinrich (1926), Jalava and Miller (1998), Miller and Jalava (2000), Razowski (2003)
L: Heinrich (1926), Bowman (1951), Jalava and Miller (1998) C: CNC, UASM

536 R *Hulda impudens* (Walsingham, 1884) E Jul – B –
T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)
L: None C: NFRC

537 * R H *Bactra furfurana* (Haworth, 1811) Jul – Aug – B G
T: Heinrich (1926), Miller (1987), Powell (1997), Razowski (2003), Gilligan et al. (2008)

L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

538 * R *Bactra verutana* Zeller, 1875 Aug – B G
T: Heinrich (1926), Diakonoff (1964), Miller (1987), Gilligan et al. (2008)
L: Heinrich (1926), Bowman (1951) C: CNC, UASM

**Olethreutini**

539 R *Paralobesia piceana* (Freeman, 1941) L May – M Jun – B –
T: Miller (1987)
L: Prentice (1965) C: CNC, NFRC

540 * R *Paralobesia aemulana* (Heinrich, 1941) Jun M b g
T: Heinrich (1926)
L: None C: CNC, POHL

541 * R *Paralobesia blandula* (Heinrich, 1926) Jun – b g
T: Heinrich (1926)
L: None C: NFRC, POHL

542 * S I *Lobesiodes euphorbiana* (Freyer, 1842) May – Sep – b G
T: Razowski (2003)
L: McClay et al. (1995) C: Unknown

543 * R *Ahmosia galbinea* Heinrich, 1926 Jun – – G
T: Heinrich (1926)
L: None C: POHL

544 R *Aterpia approximana* (Heinrich, 1919) Jul – Aug – B –
T: Heinrich (1926), Gilligan et al. (2008)
L: Bowman (1951) C: UASM

545 * R *Zomaria interruptolineana* (Fernald, 1882) Jun – B –
T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)
L: None C: DAM

546 R *Apotomis funerea* (Meyrick, 1920) Jun – Jul – b –
T: Heinrich (1926), Adamski and Peters (1986), Miller (1987)
L: Bowman (1951), Prentice (1965), Adamski and Peters (1986) C: CNC, NFRC, UASM

547 * R *Apotomis removana* (Kearfott, 1907) Jul – Aug M B g
Green Aspen Leafroller
T: Heinrich (1926), Adamski and Peters (1986), Miller (1987), Gilligan et al. (2008)
L: Heinrich (1926), Bowman (1951), Prentice (1965), Adamski and Peters (1986), Pohl et al. (2004b), Gilligan et al. (2008) C: CNC, NFRC, OLDS, UASM

548 R *Apotomis apateticana* (McDunnough, 1922) May – Jul – B –
T: Heinrich (1926), Adamski and Peters (1986)

L: Bowman (1951), Adamski and Peters (1986) C: CNC, ?NFRC, UASM

549 * R *Apotomis tertiana* (McDunnough, 1922) Jun – B –
T: Heinrich (1926), Adamski and Peters (1986)
L: Bowman (1951), Prentice (1965), Adamski and Peters (1986) C: NFRC, UASM

550 * R *Apotomis bifida* (McDunnough, 1938) Jul? m B –
T: Adamski and Peters (1986)
L: Prentice (1965) C: NFRC

551 * R H *Apotomis capreana* (Hübner, 1817) Jun – Jul M B g
T: Heinrich (1926), Adamski and Peters (1986), Miller (1987), Razowski (2003), Gilligan et al. (2008)
L: Heinrich (1926), Bowman (1951), Prentice (1965), Adamski and Peters (1986), Pohl et al. (2004b) C: CNC, NFRC, UASM

552 R *Apotomis deceptana* (Kearfott, 1905) E Aug – B –
T: Heinrich (1926), Adamski and Peters (1986), Miller (1987), Gilligan et al. (2008)
L: Heinrich (1926), Prentice (1965), Adamski and Peters (1986), Pohl et al. (2004b), Gilligan et al. (2008) C: CNC, NFRC

553 * R *Apotomis paludicolana* (Brower, 1953) Jun – B –
T: Adamski and Peters (1986)
L: Pohl et al. (2005) C: NFRC, UASM

554 R *Apotomis spinulana* (McDunnough, 1938) Jul m b –
T: Adamski and Peters (1986)
L: Prentice (1965) C: CNC

555 R H *Apotomis infida* (Heinrich, 1926) Jun – Jul M B –
T: Heinrich (1926), Adamski and Peters (1986), Miller (1987)
L: Heinrich (1926), Bowman (1951), Prentice (1965), Adamski and Peters (1986), Pohl et al. (2004b) C: CNC, NFRC, UASM

556 R *Pseudosciaphila duplex* (Walsingham, 1905) Jun – Jul M B g
Poplar Leafroller
T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)
L: Heinrich (1926), Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

557 R H *Orthotaenia undulana* ([Denis and Schiffermüller], 1775) M Jun – L Jul M B g
T: Heinrich (1926), Miller (1987), Razowski (2003), Gilligan et al. (2008)

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|---|---|---|---|---|---|---|---|---|
| | | | L: Heinrich (1926), Bowman (1951), Prentice (1965) C: AGRL, CNC, NFRC, OLDS, UASM | | | | | |
| 558 | | R | *Olethreutes rusticanum* (McDunnough, 1922)<br>T: Heinrich (1926)<br>L: Bowman (1951) C: NFRC, UASM | Aug | | – | B | g |
| 559 | | R | *Olethreutes punctanum* (Walsingham, 1903)<br>T: McDunnough (1935a), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: NFRC, UASM | Jul | | – | B | g |
| 560 | * | R | *Olethreutes inornatana* (Clemens, 1860)<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: None C: BIRD | Jun – Jul | | – | – | G |
| 561 | * | R | *Olethreutes quadrifidum* (Zeller, 1875)<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: None C: NFRC, UASM | Jun – Jul | | m | B | g |
| 562 | * | R | *Olethreutes appendiceum* (Zeller, 1875)<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Prentice (1965) C: NFRC, UASM | Jun – Jul | | – | B | g |
| 563 | * | R | *Olethreutes albiciliana* (Fernald, 1882)<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: None C: DAM | Jun – Jul | | M | B | – |
| 564 | | R H | *Olethreutes siderana* Treitschke, 1834<br>T: Heinrich (1926), Razowski (2003)<br>L: Bowman (1951) C: UASM | Jun | | M | – | – |
| 565 | * | R | *Olethreutes sordidana* (McDunnough, 1922)<br>T: Heinrich (1926)<br>L: Heinrich (1926), Bowman (1951) C: CNC, NFRC, UASM | Jul | | M | B | – |
| 566 | | R | *Olethreutes galaxana* Kearfott, 1907<br>T: Heinrich (1926), Miller (1987)<br>L: Heinrich (1926), Bowman (1951) C: CNC, NFRC, UASM | Jun | | M | – | G |
| 567 | | R | *Olethreutes astrologana* (Zeller, 1875)<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: Heinrich (1926), Bowman (1951) C: CNC, UASM | Jun – Jul | | – | B | G |
| 568 | * | R | *Olethreutes coruscana* (Clemens, 1860)<br>T: Heinrich (1926), Miller (1985a, 1987), Gilligan et al. (2008)<br>L: Heinrich (1926), Bowman (1951) C: NFRC, UASM | Jun – Jul | | M | b | g |
| 569 | * | R H | *Olethreutes metallicana* (Hübner, 1796)<br>T: [Heinrich (1926)], Miller (1985a, 1987), Razowski (2003) | Jun – Jul | | M | B | g |

L: [Heinrich (1926)], [Bowman (1951)], Miller (1985a), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE

570 * R H *Olethreutes nordeggana* (McDunnough, 1922) Jul – Aug M B g
T: Heinrich (1926), Miller and Jalava (2000), Razowski (2003)
L: Heinrich (1926), Bowman (1951), Miller and Jalava (2000) C: CNC, NFRC, UASM

571 R *Olethreutes deprecatorius* Heinrich, 1926 Jul – B g
T: Heinrich (1926)
L: Bowman (1951) C: NFRC, UASM

572 R *Olethreutes carolana* (McDunnough, 1922) Jul M b g
T: Heinrich (1926), Miller (1987)
L: Bowman (1951) C: CNC, UASM

573 * R *Olethreutes polluxana* (McDunnough, 1922) Jul M – –
T: Heinrich (1926)
L: Forbes (1923), Heinrich (1926), Bowman (1951) C: CNC, UASM

574 R H *Olethreutes glaciana* (Möschler, 1860) Jun – Aug M B G
T: Heinrich (1926), Miller (1985a, 1987), Grehan et al. (1995), Gilligan et al. (2008)
L: Heinrich (1926), Bowman (1951), Prentice (1965), ?Grehan et al. (1995), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

575 R *Olethreutes bipartitana* (Clemens, 1860) Jun – Aug M B G
T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)
L: Heinrich (1926), Bowman (1951) C: CNC, NFRC, OLDS, UASM

576 R *Olethreutes trinitana* (McDunnough, 1931) Jul – B g
T: McDunnough (1931), Miller (1987), Gilligan et al. (2008)
L: None C: CNC

577 R H *Olethreutes schulziana* (Fabricius, 1777) Jun – Jul M B g
T: Heinrich (1926), Razowski (2003)
L: Bowman (1951), Lafontaine and Wood (1997) C: CNC, NFRC, UASM

578 * R H *Olethreutes turfosana* (Herrich-Schäffer, 1851) Jun – Jul M B g
T: Heinrich (1926), Jalava and Miller (1998), Razowski (2003)
L: Forbes (1923), Heinrich (1926), Bowman (1951), Jalava and Miller (1998) C: NFRC, UASM

579 R *Olethreutes bowmanana* (McDunnough, 1923) Jul M B –
T: Heinrich (1926), Miller and Jalava (2000)

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| | | | L: Heinrich (1926), Bowman (1951), Miller and Jalava (2000) C: CNC, NFRC, UASM | | | | | |
| 580 | | R H | *Olethreutes costimaculana* (Fernald, 1882)<br>T: Heinrich (1926), Jalava and Miller (1998), Razowski (2003)<br>L: Heinrich (1926), Bowman (1951) C: CNC | Jul | | – | – | G |
| 581 | | R | *Olethreutes buckellana* (McDunnough, 1922)<br>T: Heinrich (1926)<br>L: Bowman (1951) C: UASM | Jun | | M | B | – |
| 582 | | R H | *Celypha cespitana* (Hübner, 1814)<br>T: Heinrich (1926), Miller (1987), Razowski (2003), Gilligan et al. (2008)<br>L: Heinrich (1926), Bowman (1951) C: CNC, NFRC, UASM | Jun – Aug | | M | B | g |
| 583 | | R | *Metendothenia separatana* (Kearfott, 1907)<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Prentice (1965), Gilligan et al. (2008) C: NFRC, UASM | May – Jun | | M | b | g |
| 584 | * | R H | *Hedya ochroleucana* (Frölich, 1828)<br>T: Heinrich (1926), Miller (1987), Razowski (2003), Gilligan et al. (2008)<br>L: Heinrich (1926), Bowman (1951), Prentice (1965) C: CNC, NFRC, OLDS, PMAE, UASM | Jun – Jul | | M | B | G |
| 585 | * | R I | *Hedya nubiferana* (Haworth, 1811)<br>Green Budworm<br>T: Heinrich (1926), Doganlar and Beirne (1978), Razowski (2003), Gilligan et al. (2008)<br>L: None C: NFRC | May – Jul | | – | – | G |
| **Enarmoniini** | | | | | | | | |
| 586 | | R | *Ancylis nubeculana* (Clemens, 1860)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC, NFRC, UASM | May – Jun | | M | b | g |
| 587 | * | R | *Ancylis subaequana* (Zeller, 1875)<br>T: Heinrich (1923), McDunnough (1956), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, ?OLDS, UASM | May – Jun | | M | B | g |
| 588 | * | U | *Ancylis discigerana* (Walker, 1863)<br>Yellow Birch Leaf Folder<br>T: Heinrich (1923), McDunnough (1955)<br>L: Bowman (1951) C: ?NFRC, ?UASM | Jun | | – | B | g |
| 589 | | R | *Ancylis metamelana* (Walker, 1863) | Jun – Jul | | M | b | g |

T: Heinrich (1923), McDunnough (1955), Miller (1987), Gilligan et al. (2008)
L: Bowman (1951) C: CNC, UASM

590 * R *Ancylis tenebrica* (Heinrich, 1929) Jun – B g
T: Heinrich (1929)
L: Heinrich (1929), Bowman (1951) C: CNC

591 * R *Ancylis laciniana* (Zeller, 1875) Jun – Jul – B g
T: Heinrich (1923), McDunnough (1955), Miller (1987), [Gilligan et al. (2008)]
L: ?Pohl et al. (2004b) C: ?NFRC

592 * R *Ancylis burgessiana* (Zeller, 1875) Jun – Jul – B g
Oak Leaf Folder
T: Heinrich (1923), Miller (1987), [Gilligan et al. (2008)]
L: Bowman (1951) C: CNC, UASM

593 * R *Ancylis mira* Heinrich, 1929 Jun – B g
T: Heinrich (1929), Miller (1987)
L: Bowman (1951) C: CNC, UASM

594 * R *Ancylis fuscociliana* (Clemens, 1864) Jun – Jul – B –
T: Heinrich (1923), Miller (1987)
L: ?Pohl et al. (2004b) C: CNC, ?NFRC

595 R H *Ancylis comptana* (Frölich, 1828) May – Jun M b G
Strawberry Leafroller
T: Heinrich (1923), Miller (1987), Razowski (2003), Gilligan et al. (2008)
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, ?OLDS, UASM

596 R *Ancylis apicana* (Walker, 1866) May – Jun – B g
T: Heinrich (1923), Miller (1987)
L: Bowman (1951) C: UASM

597 R *Ancylis carbonana* Heinrich, 1923 May – Jun M b –
T: Heinrich (1923), Miller (1987)
L: Bowman (1951) C: CNC, NFRC, ?OLDS, UASM

598 R H *Ancylis diminutana* (Haworth, 1811) May – Jul M B g
T: Heinrich (1923), Miller (1987), Razowski (2003), Gilligan et al. (2008)
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM

599 R *Ancylis goodelliana* (Fernald, 1882) May – Jun M B g
T: Heinrich (1923)
L: Bowman (1951) C: CNC, NFRC, UASM

600 R H *Ancylis unguicella* (Linnaeus, 1758) May – Jun M B g
T: Heinrich (1923), Miller (1987), Razowski (2003)

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| | | | L: Bowman (1951) C: CNC, NFRC, ?OLDS, UASM | | | | | |
| 601 | | R | *Ancylis mediofasciana* (Clemens, 1864)<br>T: Heinrich (1923), Miller (1987)<br>L: Bowman (1951) C: CNC, NFRC, UASM | May – Jun | M | B | g |
| 602 | | R H | *Ancylis tineana* (Hübner, 1796)<br>T: Heinrich (1923), Miller (1987), Razowski (2003)<br>L: Bowman (1951) C: CNC, NFRC, UASM | May – Jul | M | B | g |
| 603 | * | R | *Hystrichophora paradisiae* Heinrich, 1923<br>T: Heinrich (1923)<br>L: None C: CNC | E Jul | – | – | G |
| 604 | * | R | *Hystrichophora stygiana* (Dyar, 1903)<br>T: Heinrich (1923)<br>L: Heinrich (1923), Bowman (1951) C: CNC, NFRC, OLDS, UASM | L Jun – E Aug | M | b | G |
| 605 | | R | *Hystrichophora ochreicostana* (Walsingham, 1884)<br>T: Heinrich (1923, 1929), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC | Jul | – | – | G |
| 606 | * | R | *Hystrichophora vestaliana* (Zeller, 1875)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: None C: NFRC | L Jun | – | – | G |
| **Eucosmini** | | | | | | | | |
| 607 | * | S I | *Rhyacionia buoliana* ([Denis and Schiffermüller], 1775) European Pine Shoot Moth<br>T: Heinrich (1923), Miller (1987), Powell and Miller (1978), Razowski (2003), Gilligan et al. (2008)<br>L: None C: NFRC | Aug | – | b | g |
| 608 | * | R | *Retinia albicapitana* (Busck, 1914) Northern Pitch Twig Moth<br>T: Heinrich (1923), Miller (1978, 1987), Gilligan et al. (2008)<br>L: Bowman (1951), Prentice (1965), Miller (1978) C: CNC, NFRC | Jun | – | B | g |
| 609 | * | R | *Retinia metallica* (Busck, 1914)<br>T: Heinrich (1923), Miller (1978, 1987), Gilligan et al. (2008)<br>L: Prentice (1965), Miller (1978), Ives and Wong (1988) C: CNC, NFRC | L Jul | M | b | – |
| 610 | * | R | *Retinia gemistrigulana* (Kearfott, 1905)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: None C: NFRC | M Jul | – | B | – |

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| 611 | | R | *Retinia pallipennis* (McDunnough, 1938)<br>T: McDunnough (1938a), Miller (1987)<br>L: McDunnough (1938a), Bowman (1951) C: UASM | Jun | M | B | – |
| 612 | | R | *Retinia burkeana* (Kearfott, 1907)<br>T: Heinrich (1923)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM | L Jun – E Aug | M | B | g |
| 613 | * | R | *Barbara colfaxiana* (Kearfott, 1907)<br>Douglas-fir Cone Moth<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC, NFRC | Jun | M | – | – |
| 614 | | R | *Barbara mappana* Freeman, 1941<br>T: Freeman (1941), Miller (1987)<br>L: None C: CNC | Jun – Jul | – | B | – |
| 615 | * | R | *Phaneta albertana* (McDunnough, 1925)<br>T: McDunnough (1925a)<br>L: McDunnough (1925a), Bowman (1951) C: CNC | Jun | m | – | G |
| 616 | | R | *Phaneta awemeana* (Kearfott, 1907)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Lafontaine and Wood (1997), ?Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | May – Jun | – | B | g |
| 617 | * | R | *Phaneta indeterminana* (McDunnough, 1925)<br>T: McDunnough (1925a), Miller (1983c)<br>L: McDunnough (1925a), Bowman (1951) C: CNC, UASM | May – Jun | M | b | g |
| 618 | * | R | *Phaneta umbrastriana* (Kearfott, 1907)<br>T: Heinrich (1923, 1929), Miller (1983c, 1987), Gilligan et al. (2008)<br>L: Heinrich (1929), Bowman (1951), Miller (1983c) C: CNC, OLDS | Jun | – | B | g |
| 619 | * | U | *Phaneta formosana* (Clemens, 1860)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Gilligan et al. (2008) C: ?CNC, ?NFRC, ?UASM, ?USNM | May – Jun | – | B | G |
| 620 | * | R | *Phaneta corculana* (Zeller, 1874)<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC | May | M | – | – |
| 621 | * | R | *Phaneta citricolorana* (McDunnough, 1942)<br>T: McDunnough (1942)<br>L: None C: NFRC | Jun – Jul | – | B | g |
| 622 | * | R | *Phaneta amphorana* (Walsingham, 1879)<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC | Jul | – | – | G |

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| 623 | * | R | *Phaneta refusana* (Walker, 1863)<br>T: [Heinrich (1923)], Miller (1971)<br>L: Bowman (1951) C: NFRC, UASM | May – E Jun | – | B | g |
| 624 | * | U | *Phaneta verna* Miller, 1971<br>T: Miller (1971, 1987), Gilligan et al. (2008)<br>L: None C: ?CNC | May – Jun | – | B | g |
| 625 | | R | *Phaneta ochroterminana* (Kearfott, 1907)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: UASM | Jun – Aug | – | B | g |
| 626 | | R | *Phaneta marmontana* (Kearfott, 1907)<br>T: Heinrich (1923), Miller (1983c, 1987), Gilligan et al. (2008)<br>L: Heinrich (1923), Bowman (1951), Gilligan et al. (2008) C: CNC, NFRC, UASM | Jun – Aug | M | b | g |
| 627 | * | R | *Phaneta oregonensis* (Heinrich, 1923)<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC, NFRC | Jun | M | – | – |
| 628 | * | R | *Phaneta parmatana* (Clemens, 1860)<br>T: Heinrich (1923), McDunnough (1938a), Miller (1983c, 1987), Gilligan et al. (2008)<br>L: McDunnough (1938a), Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun – Aug | M | b | g |
| 629 | * | R | *Phaneta convergana* (McDunnough, 1925)<br>T: McDunnough (1925a), Miller (1987), Gilligan et al. (2008)<br>L: McDunnough (1925a), Bowman (1951), ?Pohl et al. (2004b), Gilligan et al. (2008) C: CNC | May | – | – | G |
| 630 | * | R | *Phaneta influana* (Heinrich, 1923)<br>T: Heinrich (1923), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC, NFRC | Jul | – | – | G |
| 631 | * | R | *Phaneta lapidana* (Walsingham, 1879)<br>T: Heinrich (1929), Wright et al. (1997)<br>L: Pohl et al. (2005) C: NFRC | M Sep | – | b | G |
| 632 | * | R | *Phaneta ornatula* (Heinrich, 1924)<br>T: Heinrich (1924), Miller (1987), Gilligan et al. (2008)<br>L: None C: BIRD | Jul | – | – | G |
| 633 | | R | *Phaneta elongana* (Walsingham, 1879)<br>T: Heinrich (1923)<br>L: Bowman (1951) C: UASM | Jun | M | – | – |
| 634 | * | R | *Phaneta rupestrana* (McDunnough, 1925)<br>T: McDunnough (1925a) | May – Jul | M | – | G |

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| | | | L: McDunnough (1925a), Bowman (1951) C: CNC, UASM | | | | |
| 635 | | R | *Phaneta vernalana* (McDunnough, 1942)<br>T: McDunnough (1942), Miller (1987)<br>L: None C: CNC | Jun | M | – | – |
| 636 | | R | *Phaneta tarandana* (Möschler, 1874)<br>T: Heinrich (1923), Miller (1987)<br>L: Bowman (1951) C: CNC, NFRC, UASM | May – Jun | M | b | G |
| 637 | * | R | *Phaneta nepotinana* (Heinrich, 1923)<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC, UASM | Jun | – | – | G |
| 638 | * | R | *Phaneta spectana* (McDunnough, 1938)<br>T: McDunnough (1938a)<br>L: McDunnough (1938a), Bowman (1951) C: CNC, UASM | Aug – Sep | – | B | g |
| 639 | * | R | *Phaneta misturana* (Heinrich, 1923)<br>T: Heinrich (1923)<br>L: None C: CNC | E Jun | – | b | G |
| 640 | * | U | *Phaneta parvana* (Walsingham, 1879)<br>T: Heinrich (1923, 1929)<br>L: Bowman (1951) C: Unknown | Jun | – | – | G |
| 641 | * | R | *Phaneta fertoriana* (Heinrich, 1923)<br>T: Heinrich (1923)<br>L: Bowman (1951) C: NFRC, UASM | Jun | M | b | g |
| 642 | * | R | *Phaneta crassana* (McDunnough, 1938)<br>T: McDunnough (1938a)<br>L: None C: ?CNC, UASM | May | – | – | G |
| 643 | | R | *Phaneta indagatricana* (Heinrich, 1923)<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Jun – Aug | M | b | G |
| 644 | | R | *Phaneta dorsiatomana* (Kearfott, 1905)<br>T: Heinrich (1923), Miller (1987)<br>L: Heinrich (1923), Bowman (1951) C: AGRL, CNC, NFRC, OLDS, UASM | Jun – Jul | M | b | G |
| 645 | | R | *Phaneta striatana* (Clemens, 1860)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Heinrich (1923), Bowman (1951), Gilligan et al. (2008) C: CNC, NFRC, UASM | Jul | M | b | g |
| 646 | * | R | *Phaneta delphinoides* (Heinrich, 1923)<br>T: Heinrich (1923)<br>L: None C: CNC | Aug | – | – | G |
| 647 | * | R | *Phaneta modicellana* (Heinrich, 1923) | Jul | M | b | G |

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| | | | T: Heinrich (1923) | | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | | |
| 648 | | R | *Phaneta pallidicostana* (Walsingham, 1879) | Jul | | – | B | G |
| | | | T: Heinrich (1923), Miller (1987), Gilligan et al. (2008) | | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | | |
| 649 | | R | *Phaneta artemisiana* (Walsingham, 1879) | Aug | | – | b | g |
| | | | T: Heinrich (1923) | | | | | |
| | | | L: Bowman (1951) C: UASM | | | | | |
| 650 | * | R | *Phaneta infimbriana* (Dyar, 1904) | Jul | | M | b | g |
| | | | T: Heinrich (1923, 1924) | | | | | |
| | | | L: Bowman (1951) C: UASM | | | | | |
| 651 | | R | *Phaneta octopunctana* (Walsingham, 1895) | Jul | | – | B | g |
| | | | T: Heinrich (1923) | | | | | |
| | | | L: Bowman (1951) C: NFRC, OLDS, UASM | | | | | |
| 652 | * | R | *Phaneta youngi* (McDunnough, 1925) | Jul | | M | – | – |
| | | | T: McDunnough (1925b) | | | | | |
| | | | L: McDunnough (1925b), Bowman (1951) C: ?CNC, NFRC | | | | | |
| 653 | | R | *Phaneta montanana* (Walsingham, 1884) | Jun – Aug | | – | – | G |
| | | | T: Heinrich (1923), Miller (1987), Gilligan et al. (2008) | | | | | |
| | | | L: None C: CNC, NFRC, UASM | | | | | |
| 654 | | R | *Phaneta offectalis* (Hulst, 1886) | May – Jul | | – | B | g |
| | | | T: Heinrich (1923) | | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | | |
| 655 | * | R | *Eucosma fandana* Kearfott, 1907 | Aug | | – | – | G |
| | | | T: Heinrich (1923, 1929), Wright (2007a) | | | | | |
| | | | L: None C: UASM | | | | | |
| 656 | | R | *Eucosma ridingsana* (Robinson, 1869) | Jul – Aug | | M | b | G |
| | | | T: Heinrich (1923), Miller (1987), Gilligan et al. (2008) | | | | | |
| | | | L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | | | | | |
| 657 | * | R | *Eucosma fernaldana* (Grote, 1880) | Aug | | – | – | G |
| | | | T: Heinrich (1923) | | | | | |
| | | | L: None C: UASM | | | | | |
| 658 | * | R | *Eucosma caniceps* (Walsingham, 1884) | E Aug | | – | – | G |
| | | | T: Heinrich (1923) | | | | | |
| | | | L: None C: CNC | | | | | |
| 659 | * | R | *Eucosma ragonoti* (Walsingham, 1895) | E Sep | | – | – | G |
| | | | T: Heinrich (1923) | | | | | |
| | | | L: None C: CNC, UASM | | | | | |
| 660 | * | R | *Eucosma serpentana* (Walsingham, 1895) | Jul | | – | B | G |
| | | | T: Heinrich (1923) | | | | | |
| | | | L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | | | | | |
| 661 | | R | *Eucosma ophionana* McDunnough, 1925 | Jun – Jul | | M | – | G |

T: McDunnough (1925a)
L: McDunnough (1925a), Bowman (1951) C: CNC, NFRC

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| 662 | | R | *Eucosma morrisoni* (Walsingham, 1884) | Jun – Jul | M | b | G |
| | | | T: Heinrich (1923), Miller (1987), Gilligan et al. (2008) | | | | |
| | | | L: Bowman (1951) C: CNC, NFRC, UASM | | | | |
| 663 | * | R | *Eucosma lathami* Forbes, 1937 | L Jun – E Aug | – | – | G |
| | | | L: None C: CNC, NFRC | | | | |
| 664 | * | R | *Eucosma agricolana* (Walsingham, 1879) | May – Jul | M | b | G |
| | | | T: Heinrich (1923), Miller (1974, 1987), Gilligan et al. (2008) | | | | |
| | | | L: Bowman (1951), Miller (1974) C: CNC, UASM | | | | |
| 665 | | R | *Eucosma smithiana* (Walsingham, 1895) | Jun – Jul | – | b | G |
| | | | T: Miller (1974, 1987), Gilligan et al. (2008) | | | | |
| | | | L: None C: NFRC, OLDS | | | | |
| 666 | * | R | *Eucosma vagana* McDunnough, 1925 | Jul | – | B | g |
| | | | T: Heinrich (1923), McDunnough (1925a), Miller (1985b, 1987), Gilligan et al. (2008) | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 667 | * | R | *Eucosma galenapunctana* Kearfott, 1908 | Jul | – | – | G |
| | | | T: Heinrich (1923) | | | | |
| | | | L: Bowman (1951) C: CNC, NFRC | | | | |
| 668 | * | R | *Eucosma serapicana* Heinrich, 1923 | Jun | M | – | G |
| | | | T: Heinrich (1923) | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 669 | * | R | *Eucosma watertonana* McDunnough, 1925 | Jul | M | – | – |
| | | | T: McDunnough (1925b) | | | | |
| | | | L: McDunnough (1925b), Bowman (1951) C: CNC, NFRC | | | | |
| 670 | * | R | *Eucosma louisana* McDunnough, 1944 | Jul – Aug | M | – | – |
| | | | T: McDunnough (1944a) | | | | |
| | | | L: McDunnough (1944a), Bowman (1951) C: CNC | | | | |
| 671 | | R | *Eucosma luridana* (Walsingham, 1879) | Jun | – | – | G |
| | | | T: Heinrich (1923) | | | | |
| | | | L: Bowman (1951) C: UASM | | | | |
| 672 | | R | *Eucosma subflavana* (Walsingham, 1879) | Jul | – | – | G |
| | | | T: Heinrich (1923) | | | | |
| | | | L: Bowman (1951) C: CNC | | | | |
| 673 | * | R | *Eucosma recissoriana* Heinrich, 1920 | Jun? | M | – | – |
| | | | Lodgepole Pine Cone Borer | | | | |
| | | | T: Heinrich (1923), Powell (1968) | | | | |
| | | | L: Powell (1968) C: CNC, NFRC | | | | |

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| 674 | * | R | *Eucosma lolana* Kearfott, 1907<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC, NFRC | Aug | M | – | – |
| 675 | | R | *Eucosma dodana* Kearfott, 1907<br>T: Heinrich (1923)<br>L: Heinrich (1923), Bowman (1951) C: CNC | Jul | M | – | – |
| 676 | | R | *Eucosma invicta* (Walsingham, 1895)<br>T: Heinrich (1923), Wright (2007a)<br>L: Bowman (1951), Wright (2007a) C: CNC, UASM | Aug | – | – | G |
| 677 | * | R | *Eucosma heinrichi* McDunnough, 1925<br>T: McDunnough (1925a)<br>L: None C: NFRC, UASM | Jul – Aug | m | – | G |
| 678 | | R | *Eucosma bilineana* Kearfott, 1907<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC, UASM | Jun | – | B | G |
| 679 | * | R | *Eucosma biplagata* (Walsingham, 1895)<br>T: Heinrich (1923), Powell (1963)<br>L: None C: USNM | Jul | M | – | – |
| 680 | | R | *Eucosma nandana* Kearfott, 1907<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC, UASM | Aug | – | B | g |
| 681 | * | R | *Eucosma landana* Kearfott, 1907<br>T: Heinrich (1923), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC | May | – | B | G |
| 682 | * | R | *Eucosma simplex* McDunnough, 1925<br>T: McDunnough (1925a), Gilligan et al. (2008)<br>L: McDunnough (1925a), Bowman (1951) C: CNC | Apr | – | – | G |
| 683 | | R | *Eucosma dorsisignatana* (Clemens, 1860)<br>T: Heinrich (1923), Miller (1985b, 1987), Gilligan et al. (2008)<br>L: Bowman (1951), Miller (1985b) C: CNC, NFRC, OLDS, UASM | Aug – Sep | – | B | g |
| 684 | * | R | *Eucosma similiana* (Clemens, 1860)<br>T: Heinrich (1923), Miller (1985b, 1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: NFRC | Sep | – | B | g |
| 685 | | R | *Eucosma juncticiliana* (Walsingham, 1879)<br>T: Heinrich (1923, 1929)<br>L: Bowman (1951) C: UASM | Jun – Aug | – | B | g |
| 686 | * | R | *Eucosma derelecta* Heinrich, 1929<br>T: Heinrich (1929), Miller (1987), Gilligan et al. (2008)<br>L: Heinrich (1929), Bowman (1951) C: NFRC | Jul | – | B | – |

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| 687 | * | R | *Eucosma excusabilis* Heinrich, 1923 | Jul | M | – | – |
| | | | T: Heinrich (1923) | | | | |
| | | | L: Bowman (1951) C: CNC | | | | |
| 688 | * | R | *Eucosma nuntia* Heinrich, 1929 | E Jul – E Aug | – | – | G |
| | | | T: Heinrich (1929) | | | | |
| | | | L: None C: CNC | | | | |
| 689 | * | U | *Eucosma pulveratana* (Walsingham, 1884) | Jul | – | – | G |
| | | | T: Heinrich (1923) | | | | |
| | | | L: Bowman (1951) C: Unknown | | | | |
| 690 | * | R | *Eucosma hohana* Kearfott, 1907 | Aug | M | – | – |
| | | | T: Heinrich (1923), Powell (1963) | | | | |
| | | | L: Heinrich (1923), Bowman (1951) C: CNC, UASM | | | | |
| 691 | * | R | *Eucosma suadana* Heinrich, 1923 | Jun | – | – | G |
| | | | T: Heinrich (1923) | | | | |
| | | | L: Bowman (1951) C: CNC, NFRC | | | | |
| 692 | | R | *Eucosma cataclystiana* (Walker, 1863) | Jun – Jul | M | b | G |
| | | | T: Heinrich (1923), Miller (1987), Gilligan et al. (2008) | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 693 | * | R | *Eucosma conspiciendana* Heinrich, 1923 | L Jul | M | – | G |
| | | | T: Heinrich (1923) | | | | |
| | | | L: None C: CNC, NFRC | | | | |
| 694 | | R | *Pelochrista argenteana* (Walsingham, 1895) | Jun | – | – | G |
| | | | T: Heinrich (1923), Wright (2007b), Gilligan et al. (2008) | | | | |
| | | | L: Bowman (1951), Wright (2007b) C: CNC, NFRC, UASM | | | | |
| 695 | * | R | *Pelochrista gelattana* Wright, 2007 | M Jul | – | – | G |
| | | | T: Wright (2007b) | | | | |
| | | | L: Wright (2007b) C: CNC, NFRC | | | | |
| 696 | * | R | *Pelochrista scintillana* (Clemens, 1865) | May – Jul | – | b | G |
| | | | T: Heinrich (1923), Miller (1987), Gilligan et al. (2008) | | | | |
| | | | L: Bowman (1951) C: AGRL, CNC, NFRC, OLDS, UASM | | | | |
| 697 | * | U | *Pelochrista corosana* (Walsingham, 1884) | Jul | – | – | G |
| | | | T: Heinrich (1923), Miller (1987), Wright (2007b), Gilligan et al. (2008) | | | | |
| | | | L: Bowman (1951) C: Unknown | | | | |
| 698 | * | R | *Pelochrista mediostriata* (Walsingham, 1895) | Jun | – | – | G |
| | | | T: Heinrich (1923), Wright (2008) | | | | |
| | | | L: Bowman (1951), Wright (2008) C: CNC, NFRC | | | | |
| 699 | * | R | *Pelochrista kingi* Wright, 2008 | Jul – Aug | m | – | G |
| | | | T: Wright (2008) | | | | |
| | | | L: [Bowman (1951)], Wright (2008) C: BIRD, CNC, UASM | | | | |

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| 700 | * | R | *Epiblema abruptana* (Walsingham, 1879)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: None C: CNC | Jul | – | – | G |
| 701 | | R | *Epiblema benignatum* McDunnough, 1925<br>T: McDunnough (1925a), Gilligan et al. (2008)<br>L: None C: CNC, NFRC, UASM | M Jun | – | – | G |
| 702 | * | R | *Epiblema obfuscana* (Dyar, 1888)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: None C: CNC | E Aug | M | – | – |
| 703 | | R | *Epiblema walsinghami* (Kearfott, 1907)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: UASM | May | – | B | g |
| 704 | * | R | *Epiblema periculosana* Heinrich, 1923<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC, UASM | Jun – Jul | M | – | – |
| 705 | * | R | *Epiblema lyallana* McDunnough, 1935<br>T: McDunnough (1935a)<br>L: None C: CNC | L Jul | M | – | – |
| 706 | | R | *Epiblema resumptana* (Walker, 1863)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC, UASM | May | – | B | g |
| 707 | * | R | *Notocelia purpurissatana* (Heinrich, 1923)<br>T: Heinrich (1923), McDunnough (1935a)<br>L: Bowman (1951) C: NFRC, OLDS, UASM | Jun – Jul | m | B | g |
| 708 | | R | *Notocelia illotana* (Walsingham, 1879)<br>T: Heinrich (1923), Mutuura (1980), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Mutuura (1980) C: CNC, NFRC, UASM | Jun | M | b | G |
| 709 | | R | *Notocelia culminana* (Walsingham, 1879)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jul – M Aug | M | B | g |
| 710 | | R | *Gypsonoma fasciolana* (Clemens, 1864)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | May – Jul | M | B | g |
| 711 | * | U | *Gypsonoma nebulosana* (Packard, 1866)<br>T: Heinrich (1924)<br>L: Bowman (1951) C: Unknown | Jul | – | B | g |
| 712 | * | U H | *Gypsonoma parryana* (Curtis, 1835)<br>T: Heinrich (1924), Razowski (2003)<br>L: Bowman (1951) C: Unknown | Jun | M | b | – |
| 713 | | R | *Gypsonoma haimbachiana* (Kearfott, 1907) | Jun | – | b | g |

Cottonwood Twig Borer
T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)
L: Ives and Wong (1988) C: CNC, NFRC

714 R *Gypsonoma substitutionis* Heinrich, 1923 L Jun – E Aug m B g
T: Heinrich (1923), Miller (1987), Grehan et al. (1995), Gilligan et al. (2008)
L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM

715 R *Gypsonoma salicicolana* (Clemens, 1864) Jul – Aug – B g
T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)
L: Bowman (1951), ?Pohl et al. (2004b) C: NFRC, UASM

716 R *Gypsonoma adjuncta* Heinrich, 1924 M Jun – E Jul – B g
T: Heinrich (1924), Miller (1987), Gilligan et al. (2008)
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM

717 R *Proteoteras aesculana* Riley, 1881 Apr – Aug – b G
Maple Twig Borer
T: Heinrich (1923), Wong et al. (1983), Miller (1987), Grehan et al. (1995), Gilligan et al. (2008)
L: Bowman (1951), Prentice (1965), Wong et al. (1983), Grehan et al. (1995) C: CNC, NFRC, UASM

718 R *Proteoteras willingana* (Kearfott, 1904) Jun – Jul – b G
Boxelder Twig Borer
T: Heinrich (1923), Wong et al. (1983), Miller (1987), Grehan et al. (1995), Gilligan et al. (2008)
L: Bowman (1951), Prentice (1965), Wong et al. (1983) C: AGRL, CNC, NFRC, UASM

719 R *Proteoteras crescentana* Kearfott, 1907 Jul – b G
T: Heinrich (1923), Wong et al. (1983), Miller (1987), Grehan et al. (1995), Gilligan et al. (2008)
L: Bowman (1951), Wong et al. (1983), Gilligan et al. (2008) C: CNC, NFRC, UASM

720 * R *Zeiraphera canadensis* Mutuura and Freeman, 1966 M Jul – L Aug m B g
Spruce Bud Moth
T: Heinrich (1923), Mutuura and Freeman (1966), Miller (1987), Gilligan et al. (2008)
L: Prentice (1965), Mutuura and Freeman (1966), Pohl et al. (2004b) C: CNC, NFRC, OLDS

721 * R *Zeiraphera improbana* (Walker, 1863) L Jun – E Aug M B –
Larch Needleworm

T: Heinrich (1923), Mutuura and Freeman (1966)
L: [Bowman (1951)], [Prentice (1965)], Mutuura and Freeman (1966) C: CNC, NFRC, UASM

722 R *Zeiraphera fortunana* (Kearfott, 1907) Jun – Aug m B g
Yellow Spruce Budworm
T: Heinrich (1923), Mutuura and Freeman (1966), Miller (1987)
L: Bowman (1951), Prentice (1965), Mutuura and Freeman (1966), Pohl et al. (2004b) C: CNC, NFRC, UASM

723 * R *Zeiraphera unfortunana* Ferris and Kruse, 2008 Jul – E Aug m B –
Purple-striped Shootworm
T: Mutuura and Freeman (1966), Miller (1987), Ferris and Kruse (2008)
L: Mutuura and Freeman (1966), Pohl et al. (2004b) C: NFRC

724 R *Zeiraphera hesperiana* Mutuura and Freeman, 1966 Jul M – –
T: Mutuura and Freeman (1966)
L: Pohl et al. (2005) C: NFRC

725 * R *Pseudexentera oregonana* (Walsingham, 1879) Apr – May – B G
T: Heinrich (1923), Miller (1986b, 1987), Gilligan et al. (2008)
L: Heinrich (1923), Bowman (1951), Prentice (1965), Miller (1986b), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

726 R *Gretchena semialba* McDunnough, 1925 L May – B –
T: McDunnough (1925b)
L: Pohl et al. (2005) C: NFRC

727 R *Griselda radicana* Heinrich, 1923 Jul – Sep M B g
Red-striped Needleworm
T: Heinrich (1923), Powell (1964b), Brown (1980), Miller (1987)
L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, UASM

728 * R H? *Rhopobota naevana* (Hübner, 1814) Jul m B –
Black-headed Fireworm
T: Heinrich (1923), Brown (1983), Miller (1987), Gilligan et al. (2008)
L: Pohl et al. (2005) C: NFRC

729 * R H *Epinotia trigonella* (Linnaeus, 1758) L Jul – E Sep m B –
T: Heinrich (1923), McDunnough (1935a), Brown (1980), Razowski (2003)

L: Bowman (1951), Prentice (1965), Brown (1980), Pohl et al. (2004b) C: CNC, NFRC

730 * R *Epinotia sperana* McDunnough, 1935 — Aug – Sep — M b –
T: McDunnough (1935a), [Brown (1980)]
L: McDunnough (1935a), Bowman (1951) C: CNC, UASM

731 * R H *Epinotia solandriana* (Linnaeus, 1758) — Jul – Aug — M B g
Birch-aspen Leafroller
T: Heinrich (1923), Brown (1980), Miller (1987), Razowski (2003)
L: Bowman (1951), Prentice (1965), Brown (1980), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

732 * R *Epinotia medioviridana* (Kearfott, 1908) — Aug — M – –
T: Heinrich (1923), Brown (1980), Miller (1987)
L: None C: UASM

733 R *Epinotia castaneana* (Walsingham, 1895) — Jul – E Aug — M B –
T: Heinrich (1923), Brown (1980)
L: Bowman (1951), Prentice (1965), Brown (1980), Pohl et al. (2004b) C: CNC, NFRC, OLDS

734 R *Epinotia madderana* (Kearfott, 1907) — Jul — – B g
T: Heinrich (1923), Brown (1980), Miller (1987), Gilligan et al. (2008)
L: Bowman (1951) C: UASM

735 * R *Epinotia xandana* (Kearfott, 1907) — M Apr – E May — – b g
T: Heinrich (1923), Brown (1986), Gilligan et al. (2008)
L: None C: JJDC

736 R *Epinotia albicapitana* (Kearfott, 1907) — Aug – Sep — – b G
T: Heinrich (1923), Brown (1980)
L: Pohl et al. (2005) C: NFRC

737 R *Epinotia rectiplicana* (Walsingham, 1879) — L Jun – M Jul — m B g
T: Heinrich (1923)
L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, UASM

738 R *Epinotia corylana* McDunnough, 1925 — Jun – Jul — – B g
T: McDunnough (1925a), Miller (1987)
L: Bowman (1951) C: UASM

739 R *Epinotia solicitana* (Walker, 1863) — May – Jul — M B g
Birch Shootworm
T: Heinrich (1923), Miller (1987)
L: Bowman (1951), Prentice (1965) C: CNC, NFRC, UASM

740 R H *Epinotia nisella* (Clerck, 1759) — L Jun – L Aug — M B g

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Yellowheaded Aspen Leaftier<br>T: Heinrich (1923), Miller (1986a, 1987), Razowski (2003), Gilligan et al. (2008)<br>L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | | | | | |
| 741 | | R | *Epinotia criddleana* (Kearfott, 1907)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jul – M Sep | m | B | g |
| 742 | * | U | *Epinotia albangulana* (Walsingham, 1879)<br>T: Heinrich (1923)<br>L: None C: ?NFRC | Jul | M | – | – |
| 743 | | R | *Epinotia transmissana* (Walker, 1863)<br>T: Heinrich (1923), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun – Jul | – | B | g |
| 744 | * | R | *Epinotia removana* McDunnough, 1935<br>T: McDunnough (1935a)<br>L: McDunnough (1935a), Bowman (1951) C: CNC | Jun | M | – | – |
| 745 | | R | *Epinotia momonana* (Kearfott, 1907)<br>T: Heinrich (1923), McDunnough (1935a), Miller (1987)<br>L: Bowman (1951), ?Pohl et al. (2004b) C: CNC, NFRC, UASM | Jul – Aug | – | B | g |
| 746 | | R | *Epinotia silvertoniensis* Heinrich, 1923<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC, UASM | Sep | M | – | g |
| 747 | * | R | *Epinotia digitana* Heinrich, 1923<br>T: Heinrich (1923)<br>L: Bowman (1951) C: CNC | Jul | M | – | – |
| 748 | * | R | *Epinotia nigralbana* (Walsingham, 1879)<br>T: Heinrich (1923)<br>L: None C: CNC, NFRC | Jun | M | – | g |
| 749 | * | R H | *Epinotia crenana* (Hübner, 1827)<br>T: Brown (1980), Razowski (2003)<br>L: Bowman (1951), Prentice (1965), Brown (1980) C: CNC, NFRC, OLDS, UASM | Apr – May; Oct (H) | M | B | g |
| 750 | * | R | *Epinotia arctostaphylana* (Kearfott, 1904)<br>T: Heinrich (1923), Brown (1980)<br>L: Bowman (1951), Brown (1980) C: CNC, UASM | Sep | m | B | – |
| 751 | * | U | *Epinotia nonana* (Kearfott, 1907)<br>T: Heinrich (1923, 1929), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: Unknown | Jul | – | – | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 752 | * | R | *Epinotia aridos* Freeman, 1960<br>T: Freeman (1960)<br>L: None C: UASM | L Jun | M | – | – |
| 753 | | R | *Epinotia lomonana* (Kearfott, 1908)<br>T: Heinrich (1923), Brown (1980)<br>L: Bowman (1951), Brown (1980) C: CNC, NFRC, OLDS, UASM | Sep | – | b | g |
| 754 | | R H | *Epinotia medioplagata* (Walsingham, 1895)<br>T: Heinrich (1923), Brown (1980), Miller (1987)<br>L: Bowman (1951), Prentice (1965), Brown (1980) C: CNC, NFRC, OLDS, UASM | Jul – Aug | M | B | G |
| 755 | | R H | *Epinotia cruciana* (Linnaeus, 1761)<br>T: Heinrich (1923), Brown (1980), Miller (1987), Razowski (2003)<br>L: Bowman (1951), Prentice (1965), Brown (1980) C: CNC, NFRC, UASM | Jul – Sep | M | B | – |
| 756 | * | R | *Epinotia seorsa* Heinrich, 1924<br>T: Brown (1980)<br>L: Bowman (1951), Prentice (1965), Brown (1980) C: CNC, NFRC | Aug – Sep | M | – | – |
| 757 | | R | *Epinotia lindana* (Fernald, 1892)<br>T: Heinrich (1923), Brown (1980), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, OLDS, UASM | Aug – Sep | m | B | g |

**Grapholitini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 758 | * | R | *Dichrorampha simulana* (Clemens, 1860)<br>T: Heinrich (1926), Miller (1983c, 1987), Gilligan et al. (2008)<br>L: Bowman (1951), Miller (1983c) C: CNC, UASM | Jun | M | – | – |
| 759 | * | R | *Dichrorampha bittana* (Busck, 1906)<br>T: Heinrich (1926), Miller (1983c, 1987), Gilligan et al. (2008)<br>L: None C: CNC | Jul | – | B | g |
| 760 | * | R | *Dichrorampha radicicolana* Walsingham, 1879<br>T: Heinrich (1926)<br>L: None C: NFRC | Jul | M | – | – |
| 761 | * | R | *Dichrorampha banana* (Busck, 1906)<br>T: Heinrich (1926)<br>L: None C: USNM | Jul | M | – | – |
| 762 | | R | *Dichrorampha piperana* (Busck, 1900)<br>T: Heinrich (1926) | Jun | M | – | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951) C: UASM | | | | | |
| 763 | | R H | *Dichrorampha sedatana* (Busck, 1906)<br>T: Heinrich (1926), Miller (1983c, 1987), Razowski (2003), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Jun | M | B | – |
| 764 | | R | *Pammene felicitana* Heinrich, 1923<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC, UASM | Jun | – | B | g |
| 765 | * | R | *Pammene perstructana* (Walker, 1863)<br>T: Heinrich (1926), Miller (1987, 1990)<br>L: Bowman (1951) C: UASM | Jun – Sep | M | b | g |
| 766 | * | R | *Pammene bowmanana* (McDunnough, 1927)<br>T: McDunnough (1927b)<br>L: McDunnough (1927b), Bowman (1951) C: CNC, NFRC, UASM | May – Jun | M | B | – |
| 767 | | R | *Grapholita packardi* Zeller, 1875<br>Cherry Fruitworm<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Jun – Jul | – | b | g |
| 768 | | R | *Grapholita prunivora* (Walsh, 1868)<br>Lesser Appleworm<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: Bowman (1951) C: CNC, NFRC, UASM | Aug | m | b | g |
| 769 | * | R | *Grapholita imitativa* Heinrich, 1926<br>T: Heinrich (1926)<br>L: Heinrich (1926), Bowman (1951) C: CNC | May | M | – | – |
| 770 | | R | *Grapholita lunatana* Walsingham, 1879<br>T: Heinrich (1926)<br>L: Heinrich (1926), Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM | May | M | B | g |
| 771 | * | R | *Grapholita interstinctana* (Clemens, 1860)<br>Clover Head Caterpillar<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008)<br>L: Heinrich (1926), Bowman (1951), Gilligan et al. (2008) C: CNC, NFRC | Jun – Jul | M | – | – |
| 772 | * | R | *Grapholita dyarana* (Kearfott, 1907)<br>T: Heinrich (1926)<br>L: None C: CNC | Jun | – | – | G |
| 773 | * | R | *Cydia bracteatana* (Fernald, 1880)<br>T: Heinrich (1926)<br>L: None C: NFRC | ? | M | – | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 774 | * | R | *Cydia rana* (Forbes, 1924)<br>T: Heinrich (1926)<br>L: Heinrich (1926), Bowman (1951) C: CNC | Jul | M | – | – |
| 775 | * | R | *Cydia inopiosa* (Heinrich, 1926)<br>T: Heinrich (1926), Brown and Miller (1983), Miller (1987)<br>L: None C: NFRC | ? | M | – | – |
| 776 | * | R H | *Cydia strobilella* (Linnaeus, 1758)<br>Spruce Seed Moth<br>T: Heinrich (1926), Brown and Miller (1983), Miller (1987), Razowski (2003)<br>L: Bowman (1951), Prentice (1965) C: NFRC, OLDS, UASM | May – Jun | – | B | g |
| 777 | | R | *Cydia multilineana* (Kearfott, 1908)<br>T: Heinrich (1926), Miller (1987)<br>L: Bowman (1951) C: CNC, NFRC, UASM | May – Jun | m | B | g |
| 778 | | R | *Cydia ingrata* (Heinrich, 1926)<br>T: Heinrich (1926)<br>L: Bowman (1951) C: ?OLDS | May | – | B | g |
| 779 | | R | *Cydia populana* (Busck, 1916)<br>T: Heinrich (1926), Miller (1987)<br>L: Heinrich (1926), Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, UASM | May – Jul | M | B | g |
| 780 | | R | *Cydia flexiloqua* (Heinrich, 1926)<br>T: Heinrich (1926), McDunnough (1944a), Miller (1987)<br>L: Heinrich (1926), McDunnough (1944a), Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul | M | B | g |
| 781 | * | R I | *Cydia nigricana* (Fabricius, 1794)<br>Pea Moth<br>T: Heinrich (1926), Miller (1987), Razowski (2003)<br>L: Heinrich (1926), Bowman (1951) C: CNC, UASM | Jun – Jul | m | b | G |
| 782 | | R | *Cydia prosperana* (Kearfott, 1907)<br>T: Heinrich (1926)<br>L: Heinrich (1926), Bowman (1951) C: CNC, NFRC, UASM | Jun | M | – | – |
| 783 | | R | *Cydia lautiuscula* (Heinrich, 1926)<br>T: Heinrich (1926)<br>L: Bowman (1951) C: UASM | May | – | b | g |
| 784 | * | R | *Cydia toreuta* (Grote, 1873)<br>Eastern Pine Seedworm<br>T: Heinrich (1926), Miller (1987), Gilligan et al. (2008) | Jun | – | B | – |

L: Hiratsuka et al. (1995) C: NFRC

## Urodoidea

### *38. Urodidae – false burnet moths*

Small (17–25 mm wingspan) moths with elongate–oval wings. Until very recently, these moths were placed within the family Yponomeutidae; the definitive placement of this family remains unresolved (Dugdale et al. 1999). These moths are superficially similar to species of the Blastobasidae and Yponomeutidae; they can be separated from the former by the lack of scales on the base of the haustellum, but no easily observed characters separate them from the latter. Larvae are external feeders on deciduous trees.

This is a small family (approximately 60 species, restricted to Neotropical and Holarctic regions), two of which are known from North America. One species has been recently discovered in AB (J.-F. Landry 1998b). It was illustrated by Heppner (1997). The other North American species was illustrated by Covell (1984).

785 * R H *Wockia asperipunctella* (Bruand, 1852) L May – M Jun – B –
T: Heppner (1997), J.-F. Landry (1998b)
L: J.-F. Landry (1998b), Pohl et al. (2004b, 2005) C: CNC, NFRC

## Schreckensteinioidea

### *39. Schreckensteiniidae – bristle-legged moths*

Small (10–15 mm wingspan) moths with narrow wings. They can be separated from other small, narrow-winged moths by the presence of large spines on the dorsal surface of the metatibia. They have a characteristic pose in which the hind legs are elevated. This family has been variously placed in the Yponomeutoidea or Copromorphoidea; it is likely allied with the Epermenioidea but its exact placement is unresolved (Dugdale et al. 1999). Larvae are external feeders on a number of plants.

This is a small family (8 species, restricted to the Holarctic and Neotropical regions), with three species known in North America. One of these has been recently discovered in AB (Pohl et al. 2005). All three North American species were covered by Forbes (1923).

786 * R H *Schreckensteinia festaliella* Hübner, 1818 May – Jun m B g
Blackberry Skeletonizer
T: Forbes (1923)
L: Pohl et al. (2005) C: NFRC

## Epermenioidea

### *40. Epermeniidae – fringe-tufted moths*

Minute to small (6–20 mm wingspan) moths with narrow, fringed wings, usually with one or more tufts of erect scales. They can be separated from other small, narrow-winged moths by the presence of large spines on the metatibiae (not restricted to the dorsal surface as in Schreckensteiniidae). Known larvae begin life as concealed feeders, feeding externally in later instars.

Worldwide, 83 species of Epermeniidae are known, from all regions; 11 are known from North America. Five species are known from AB, and a sixth is expected to be found here. The group was revised recently by Gaedike (1977), but the descriptions are brief and the illustrations poor. Two more species were described by Gaedike (2008). Three AB species were illustrated by Pohl et al. (2005).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 787 | * | R | *Epermenia falcata* Gaedike, 2008<br>T: Gaedike (2008)<br>L: [Pohl et al. (2005)] C: NFRC | M Jul | – | B | – |
| 788 | * | R | *Epermenia canadensis* Gaedike, 2008<br>T: Gaedike (2008)<br>L: Gaedike (2008) C: CNC | Aug | M | – | – |
| 788.1 | * | P | *Epermenia albapunctella* Busck, 1908<br>T: Gaedike (1977) | M Aug | – | B | – |
| 789 | * | R | *Epermenia lomatii* Gaedike, 1977<br>T: Gaedike (1977)<br>L: Pohl et al. (2005) C: UASM | M Jun | – | B | – |
| 790 | * | R | *Epermenia infracta* Braun, 1926<br>T: Gaedike (1977)<br>L: Bowman (1951), Gaedike (1977) C: CNC, ?NFRC, UASM | Jun – Jul | M | – | – |
| 791 | * | R | *Ochromolopis ramapoella* Kearfott, 1903<br>T: Gaedike (1977)<br>L: Pohl et al. (2005) C: CNC, NFRC | M Jun – M Jul | – | b | G |

## Alucitoidea

### *41. Alucitidae – many-plumed moths*

Small (10–22 mm wingspan), mottled moths with wings deeply divided into a number of plumes (six in the forewing, seven in the hindwing in North American species). When at rest, these distinctive moths usually sit in a characteristic fanlike pose. They overwinter as adults and are often found in houses at any time of the year. Larvae feed on deciduous plants; at least some are borers in buds, flowers, and shoots.

Over 180 species of Alucitidae are known worldwide; three described species are known in North America, all of which occur in AB. The group was revised recently, by Landry and Landry (2004).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 792 | * | R | *Alucita montana* Barnes and Lindsey, 1921<br>T: Landry and Landry (2004)<br>L: [Bowman (1951)], Landry and Landry (2004) C: CNC, NFRC, OLDS, UASM | Jan – Dec (H) | m | B | g |
| 793 | * | R | *Alucita adriendenisi* Landry and Landry, 2004<br>T: Landry and Landry (2004)<br>L: Landry and Landry (2004) C: CNC, NFRC | Jan – Dec (H) | m | B | g |
| 794 | * | R | *Alucita lalannei* Landry and Landry, 2004<br>T: Landry and Landry (2004)<br>L: Landry and Landry (2004), Pohl et al. (2004b) C: CNC, NFRC | May – Sep (H) | – | B | g |

## Pterophoroidea

### 42. Pterophoridae – plume moths

Small to medium-sized (15–30 mm wingspan) moths with long, slender bodies, and hindwings divided into three plumes. One species in CA (as well as several primitive species outside North America) do not have such divided wings. They are weak fliers and have a characteristic posture at rest, holding the wings at right angles to the long body in the shape of a letter T. Larvae construct and live in loose webs. Many species are flower and seed feeders on Asteraceae, although many other plant families are utilized by the group as well.

Approximately 1150 species of Pterophoridae are known, from all parts of the world. One hundred and forty-six species are known in North America, 48 of which are reported in AB. Species richness is particularly notable in the Rocky Mountains. A world checklist has been recently published (Gielis 2003), and the European fauna was revised by Gielis (1996). However, the North American fauna was last revised by Barnes and Lindsey (1921), and is not well known. In an unpublished thesis, Landry (1987) covered the eastern Canadian species, providing information and figures that are useful in western Canada as well. The higher classification here follows Gielis (2003).

**Pterophorinae**

**Platyptiliini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 795 | | R H | *Platyptilia tesseradactyla* (Linnaeus, 1761)<br>T: Landry (1987), Geilis (1996)<br>L: Bowman (1951), Landry (1987) C: CNC | Jun | M | B | – |
| 796 | | R | *Platyptilia carduidactylus* (Riley, 1869)<br>T: Landry (1987)<br>L: Bowman (1951) C: OLDS, UASM | May – Jul | M | b | G |
| 797 | * | R | *Platyptilia percnodactylus* (Walsingham, 1880)<br>T: Lange (1950)<br>L: Lange (1950), Bowman (1951) C: CNC, UASM | Jun – Jul | M | – | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 798 | | R | *Platyptilia comstocki* Lange, 1939<br>T: Landry (1987)<br>L: Bowman (1951), Landry (1987) C: CNC | Jun – Jul | – | – | G |
| 799 | | R | *Platyptilia albicans* (Fish, 1881)<br>T: Barnes and Lindsey (1921), Lange (1950)<br>L: Bowman (1951) C: CNC, NFRC | Jun | M | – | – |
| 800 | * | R | *Gillmeria pallidactyla* (Haworth, 1811)<br>T: Landry (1987), Gielis (1996)<br>L: Bowman (1951), Landry (1987) C: CNC, NFRC, OLDS, UASM | Jun – Jul | M | B | g |
| 801 | * | R | *Gillmeria albertae* (Barnes and Lindsey, 1921)<br>T: Barnes and Lindsey (1921)<br>L: Barnes and Lindsey (1921), Bowman (1951) C: CNC | Aug | M | – | – |
| 802 | | R | *Stenoptilia coloradensis* Fernald, 1898<br>T: Landry (1987)<br>L: Bowman (1951), Landry (1987) C: UASM | Jul – Sep | M | B | G |
| 803 | | R | *Stenoptilia columbia* McDunnough, 1927<br>L: Bowman (1951) C: CNC, UASM | Jun – Jul | M | – | – |
| 804 | | R | *Paraplatyptilia edwardsii* (Fish, 1881)<br>T: Landry (1987)<br>L: Bowman (1951), Landry (1987) C: CNC, OLDS, UASM | Jun – Jul | M | – | G |
| 805 | * | R | *Paraplatyptilia albiciliatus* (Walsingham, 1880)<br>T: McDunnough (1927a), Lange (1950)<br>L: Bowman (1951) C: CNC, OLDS, UASM | Jun – Jul | M | – | – |
| 806 | * | R | *Paraplatyptilia shastae* (Walsingham, 1880)<br>T: McDunnough (1927a)<br>L: McDunnough (1927a), Bowman (1951) C: CNC | Jun | M | – | – |
| 807 | * | R | *Paraplatyptilia nana* (McDunnough, 1927)<br>T: McDunnough (1927a)<br>L: McDunnough (1927a), Bowman (1951) C: CNC, UASM | Jun | M | – | – |
| 808 | * | R | *Paraplatyptilia albidorsellus* (Walsingham, 1880)<br>T: Barnes and Lindsey (1921), Lange (1950)<br>L: Lange (1950), Bowman (1951) C: CNC | Jun | M | – | – |
| 809 | * | R | *Paraplatyptilia maea* (Barnes and Lindsey, 1921)<br>T: Barnes and Lindsey (1921), Lange (1950)<br>L: Barnes and Lindsey (1921), Bowman (1951) C: CNC, UASM | E Aug – M Aug | M | – | – |
| 810 | * | R | *Paraplatyptilia modesta* (Walsingham, 1880)<br>T: Lange (1950)<br>L: None C: UASM | E May – L Jun;<br>E Sep – Oct (H) | – | – | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 811 | * | R | *Paraplatyptilia bowmani* (McDunnough, 1923)<br>T: McDunnough (1923a)<br>L: McDunnough (1923a), Bowman (1951) C: CNC, UASM | May – Aug | M | – | g |
| 812 | | R | *Amblyptilia pica* (Walsingham, 1880)<br>T: Landry (1987)<br>L: Bowman (1951), Landry (1987), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | May – Sep | M | B | G |
| **Oxyptilini** | | | | | | | |
| 813 | * | R | *Geina tenuidactylus* (Fitch, 1854)<br>T: Landry (1987)<br>L: Bowman (1951), Landry (1987) C: CNC, UASM | Jun | M | – | G |
| 814 | * | U | *Capperia ningoris* (Walsingham, 1880)<br>T: Barnes and Lindsey (1921)<br>L: Bowman (1951) C: Unknown | Jun – Jul | – | B | g |
| 815 | * | R | *Capperia evansi* (McDunnough, 1923)<br>T: McDunnough (1923a), Landry (1987)<br>L: Landry (1987) C: CNC, UASM | Jul | M | b | G |
| 816 | * | U | *Capperia raptor* (Meyrick, 1908)<br>T: Barnes and Lindsey (1921)<br>L: Bowman (1951) C: Unknown | Jun | M | – | G |
| 817 | * | R | *Oxyptilus delawaricus* Zeller, 1873<br>T: Landry (1987)<br>L: Bowman (1951), Landry (1987) C: CNC | Jun – Jul | M | – | – |
| 818 | * | R | *Dejongia lobidactylus* (Fitch, 1854)<br>T: Landry (1987)<br>L: Bowman (1951), Landry (1987) C: CNC, OLDS, UASM | Jul | M | B | g |
| **Oidaematophorini** | | | | | | | |
| 819 | * | U | *Hellinsia fishii* (Fernald, 1893)<br>T: McDunnough (1923a, 1927a)<br>L: McDunnough (1927a) C: Unknown | L Jul | M | – | – |
| 820 | * | R | *Hellinsia gratiosus* (Fish, 1881)<br>T: McDunnough (1927a)<br>L: McDunnough (1927a), Bowman (1951) C: CNC | Jul | M | – | – |
| 821 | | R | *Hellinsia helianthi* (Walsingham, 1880)<br>T: Barnes and Lindsey (1921)<br>L: Bowman (1951) C: CNC | Jul | M | – | – |
| 822 | | R | *Hellinsia homodactylus* (Walker, 1864)<br>T: Barnes and Lindsey (1921)<br>L: ?Barnes and Lindsey (1921), Bowman (1951), Pohl et al. (2004b) C: CNC, UASM | Jun – Jul | M | B | g |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 823 | | R | *Hellinsia elliottii* (Fernald, 1893)<br>T: Barnes and Lindsey (1921)<br>L: Bowman (1951) C: UASM | Jun – Jul | M | b | g |
| 824 | * | R H | *Hellinsia pectodactylus* (Staudinger, 1859)<br>T: Barnes and Lindsey (1921), Geilis (1996)<br>L: ?Barnes and Lindsey (1921), Bowman (1951) C: CNC, UASM | Jun – Aug | M | b | G |
| 825 | | R | *Hellinsia kellicottii* (Fish, 1881)<br>T: Cashatt (1972)<br>L: Bowman (1951) C: UASM | E Jun – M Jul | M | – | – |
| 826 | * | R | *Hellinsia lacteodactylus* (Chambers, 1873)<br>T: McDunnough (1927a), Cashatt (1972)<br>L: McDunnough (1927a) C: CNC | M Jun | – | B | g |
| 827 | * | R | *Hellinsia subochraceus* (Walsingham, 1880)<br>T: Barnes and Lindsey (1921)<br>L: None C: DAM | M Jul | – | – | G |
| 828 | * | R | *Hellinsia sulphureodactylus* (Packard, 1873)<br>T: McDunnough (1927a)<br>L: None C: CNC | M Jul | – | – | G |
| 829 | | R | *Hellinsia corvus* (Barnes and Lindsey, 1921)<br>T: Barnes and Lindsey (1921)<br>L: Bowman (1951) C: CNC, UASM | Jun | M | – | – |
| 830 | * | R | *Hellinsia arion* (Barnes and Lindsey, 1921)<br>T: Barnes and Lindsey (1921)<br>L: None C: BIRD, DAM | L Jul – E Aug | – | b | g |
| 831 | | R | *Oidaematophorus occidentalis* Walsingham, 1880<br>T: McDunnough (1939a)<br>L: Bowman (1951) C: UASM | Aug | M | – | – |
| 832 | | R | *Oidaematophorus balsamorrhizae* McDunnough, 1939<br>T: McDunnough (1939a)<br>L: Bowman (1951) C: CNC | Jun – Jul | M | – | – |
| 833 | | R | *Oidaematophorus mathewianus* (Zeller, 1874)<br>T: Barnes and Lindsey (1921)<br>L: Bowman (1951) C: CNC, UASM | Jul – Aug | M | – | – |
| 834 | * | R | *Oidaematophorus phaceliae* McDunnough, 1938<br>T: McDunnough (1938b)<br>L: McDunnough (1938b), Bowman (1951) C: CNC, NFRC, UASM | Jul | M | B | G |
| 835 | | R | *Oidaematophorus grisescens* Walsingham, 1880<br>T: McDunnough (1927a)<br>L: McDunnough (1927a), Bowman (1951) C: CNC | Jul | – | – | G |
| 836 | * | R | *Oidaematophorus rileyi* (Fernald, 1898)<br>T: McDunnough (1927a) | Jun | M | – | – |

L: McDunnough (1927a), Bowman (1951) C: Unknown

837 R *Oidaematophorus lindseyi* McDunnough, 1923 Jul – Aug – B g
T: McDunnough (1923a)
L: McDunnough (1923a), Bowman (1951) C: UASM

838 * R *Oidaematophorus castor* Barnes and Lindsey, 1921 L Jun – E Aug M – –
T: Barnes and Lindsey (1921)
L: None C: CNC

839 R *Oidaematophorus brucei* (Fernald, 1898) Jun – Jul M b G
T: Barnes and Lindsey (1921)
L: ?Barnes and Lindsey (1921), Bowman (1951) C: CNC, UASM

840 R H *Emmelina monodactyla* (Linnaeus, 1758) Jun – Oct M b g
T: Barnes and Lindsey (1921), Geilis (1996)
L: ?Barnes and Lindsey (1921), Bowman (1951) C: OLDS, UASM

841 R *Adaina montanus* (Walsingham, 1880) Aug – B g
T: Barnes and Lindsey (1921)
L: Bowman (1951) C: CNC, UASM

842 R *Adaina cinerascens* (Walsingham, 1880) Jun M – –
T: McDunnough (1939a)
L: Bowman (1951) C: CNC

## Copromorphoidea

### 43. Copromorphidae – tropical fruitworm moths

Small (14–25 mm wingspan) cryptically colored moths with moderately broad, rounded wings. There are no readily distinguishable features, and no clear autapomorphies separate them from the Carposinidae. Larvae are borers or concealed feeders.

Approximately 40 species of Copromorphidae are known worldwide, primarily in the tropics. Five species are known from North America; one of these occurs AB. The North American fauna was treated by Heppner (1984, 1986).

843 * R *Ellabella editha* Busck, 1925 Jun – Jul M – –
T: Heppner (1984)
L: Bowman (1951), Heppner (1984) C: CNC, NFRC

### 44. Carposinidae – fruitworm moths

Small to medium-sized (10–38 mm wingspan) moths with moderately broad lanceolate wings. Superficially, these moths resemble tortricids or small crambids. Most species are gray, and the males of most species have irregular patches of raised scales. The status of the group is uncertain; they are likely subordinate within the Copromorphi-

dae. No easily observed features distinguish them from other groups of moths. The larvae are endophytic within fruits and galls.

Approximately 270 species of Carposinidae are known worldwide. Eleven species are known from North America, one of these occurs in AB. The group was treated by Davis (1968).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 844 | * | S h | *Carposina sasakii* Matsumura, 1900<br>T: Davis (1968)<br>L: Bowman (1951) C: UASM | Jun | – | B | g |
| 845 | | R | *Bondia comonana* (Kearfott, 1907)<br>T: Davis (1968)<br>L: Bowman (1951), Davis (1968) C: CNC, NFRC, UASM | May – Jun | M | B | g |
| 846 | | R | *Bondia crescentella* (Walsingham, 1882)<br>T: Davis (1968)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM | L Apr – May | – | B | g |

## Pyraloidea

### *45. Pyralidae – pyralid moths*

A diverse family of moths that can be separated from all other moths except the Crambidae by the presence of tympanal chambers on the base of the abdomen, in the space between the thorax and abdomen. They can be separated from the Crambidae by having the tympanal organs almost completely closed and by the lack of a large flap over the tympana. Larvae have diverse feeding habits.

The Pyralidae is a large group that reaches its highest diversity in the temperate and tropical regions. The family is incompletely known taxonomically, with much of the work scattered among older publications. Approximately 6100 species are known worldwide; 674 have been reported in North America, of which 87 are reported herein from AB.

#### *45.1. Galleriinae*

Small to medium-sized (15–35 mm wingspan) moths with stout bodies and moderately broad wings, often resembling Noctuidae. No easily observed characters distinguish them from other pyralid moths. Larvae feed on dried protein and carbohydrates; several species are pests in stored products and bees' nests.

Approximately 260 species of Galleriinae are known worldwide; 30 species are known in North America, one of which occurs in indoor settings in AB. The subfamily Galleriinae is poorly known taxonomically, and no revisionary work has been done on the North American fauna in over 50 years. However, the pest species are covered in numerous applied publications.

**Galleriini**

847 * H I *Galleria mellonella* Linnaeus, 1758 [Jan – Dec] – – –
Greater Wax Moth, Wax Worm (larva)
T: Covell (1984)
L: None C: Unknown

### *45.2. Chrysauginae*

Small (10–30 mm wingspan) moths with relatively broad wings. They can be distinguished from other pyralids by the absence of maxillary palps. Larvae have diverse, sometimes bizarre feeding habits. Most are leafrollers or borers in fruits, stems, or roots. In the tropics, several genera are associated with sloths and feed on sloth dung; some others feed in ant and wasp nests, and one species has been observed feeding on the spines of saturniid larvae.

Approximately 400 species of Chrysauginae are known worldwide, mostly in the neotropics. Thirty-eight species are known from North America, one of which is reported in AB. The North American species in the group were treated in an unpublished thesis by Cashatt (1968); a few more species have been described or reported in North America since then.

848 * R *Acallis gripalis* (Hulst, 1886) Jun – Jul – – G
T: Cashatt (1968)
L: Bowman (1951), Cashatt (1968) C: CNC

### *45.3. Pyralinae*

Small (15–30 mm wingspan), often brightly colored moths with broad wings, superficially similar to the geometrids or the pyraustine crambids. Larvae feed primarily on dried materials or detritus; several species are pests of stored products. A few species feed on living plants.

Approximately 900 species of Pyralinae are known worldwide, primarily from Asia and Africa. Twenty-seven species are known in North America, seven of which are reported in AB. The higher taxonomy of the group was treated by Solis and Shaffer (1999). Although the pest species are reasonably well known, most descriptions of North American Pyralinae are more than 100 years old, and no species-level revisions have been published for the group.

**Pyralini**

849 R I *Pyralis farinalis* Linnaeus, 1758 Jun – Aug M B G
Meal Moth
L: Kearfott (1905), Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM

850 * H I *Aglossa pinguinalis* (Linnaeus, 1758) [Jan – Dec] – – –

Large Tabby
L: None C: UASM

851 * R I *Aglossa caprealis* (Hübner, 1809) Aug – b g
L: None C: NFRC

852 * R I *Aglossa cuprina* Zeller, 1872 Aug – – G
Grease Moth
T: Covell (1984)
L: None C: BIRD

853 * S I *Hypsopygia costalis* (Fabricius, 1775) Jul – b g
Clover Hayworm
L: Pohl et al. (2005) C: OLDS

854 * R *Dolichomia olinalis* (Guenée, 1854) Jun – Aug – b g
L: None C: CNC, NFRC, OLDS

855 * R *Dolichomia thymetusalis* (Walker, 1859) Jul – B g
Spruce Needleworm
L: Bowman (1951), Prentice (1965), Lafontaine and Wood (1997), Pohl et al. (2004b) C: NFRC, OLDS, UASM

## 45.4. Epipaschiinae

Small to medium-sized (20–35 mm wingspan) moths. They can be distinguished from all other pyralids by the distinctively upturned and elongated last segment of the labial palps. Larvae are leafrollers, leaftiers, and leafminers.

Approximately 570 species of Epipaschiinae are known worldwide, from tropical and temperate regions except Europe. Forty-nine species are known from North America, four of which are reported in AB. Western hemisphere members of the group were treated by Holland and Schaus (1925); a few more species have been added to the North American fauna since that time. Solis (1991, 1993) provides modern taxonomic treatment of a few species.

856 R *Toripalpus trabalis* Grote, 1881 Jul – – G
T: Solis (1993)
L: Bowman (1951) C: CNC, NFRC, OLDS

857 * R *Pococera aplastella* (Hulst, 1888) Jul – B g
Aspen Webworm
T: Holland and Schaus (1925), Allyson (1977)
L: Bowman (1951), Prentice (1965), Allyson (1977) C: NFRC, UASM

858 * R *Pococera asperatella* (Clemens, 1860) Jul – B –
Maple Webworm
T: Holland and Schaus (1925)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: None C: NFRC, ?OLDS | | | | | |
| 859 | * | R | *Pococera baptisiella* (Fernald, 1887)<br>T: Holland and Schaus (1925)<br>L: None C: CNC | E Jul | – | – | G |

### 45.5. Phycitinae

Mostly small to medium-sized (10–30 mm wingspan, a few up to 50 mm wingspan) moths with drably colored wings. They can usually be separated from other pyralids by the wing shape and pattern. The forewings are relatively narrow and are usually predominantly gray, with diffuse transverse bands of black and white scales on the forewings. The hindwings are fan shaped and silky cream or gray. Most larvae are leafrollers; a few feed within silken tubes, are borers in a variety of plant parts, or feed on dry materials. Several are of economic importance, such as the coneworms (*Dioryctria* spp.), which affect conifers, and a number of pests of stored products. A few large species are borers in cacti.

The Phycitinae is a large group, with approximately 4000 species known from throughout the world. At last count, 530 species were known from North America; 74 species are reported in AB. The majority of species have been treated recently by Neunzig (1986, 1990, 1997, 2003). Most of the remaining species were covered in the older comprehensive work by Heinrich (1956) or by Shaffer (1968).

**Phycitini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 860 | * | R | *Acrobasis indigenella* (Zeller, 1848)<br>Leaf Crumpler<br>T: Heinrich (1956), Neunzig (1986)<br>L: ?Neunzig (1986) C: NFRC | L Jun – Jul | – | – | G |
| 861 | | R | *Acrobasis tricolorella* Grote, 1878<br>Destructive Prune Worm<br>T: Heinrich (1956), Neunzig (1986)<br>L: Bowman (1951), ?Neunzig (1986) C: CNC, NFRC, OLDS, UASM | Jun – Aug | – | b | g |
| 862 | * | R | *Acrobasis betulella* Hulst, 1890<br>Birch Tubemaker<br>T: Heinrich (1956), Neunzig (1986)<br>L: Pohl et al. (?2004b, 2005) C: NFRC | Jul | – | – | g |
| 863 | * | R | *Myelopsis minutularia* (Hulst, 1887)<br>T: Heinrich (1956), Neunzig (1990)<br>L: Bowman (1951), ?Neunzig (1990) C: CNC, OLDS, UASM | Aug | – | B | G |
| 864 | * | R | *Myelopsis subtetricella* (Ragonot, 1889)<br>T: Heinrich (1956), Neunzig (1990) | May – Jun | M | B | G |

L: Bowman (1951), Heinrich (1956), Neunzig (1990), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

865 R *Apomyelois bistriatella* (Hulst, 1887) Jun – Aug – B g
T: Heinrich (1956), Neunzig (1990)
L: Bowman (1951), Neunzig (1990) C: CNC, NFRC, OLDS, UASM

866 R *Eulogia ochrifrontella* (Zeller, 1876) Jun – Jul – B g
T: Heinrich (1956), Neunzig (1990)
L: Bowman (1951), ?Neunzig (1990), Pohl et al. (2004b) C: NFRC, OLDS, UASM

867 R *Ephestiodes gilvescentella* Ragonot, 1887 Jul – – G
T: Heinrich (1956), Neunzig (1990)
L: Bowman (1951) C: CNC

868 R *Moodna ostrinella* (Clemens, 1860) Jul – B g
T: Heinrich (1956), Neunzig (1990)
L: Bowman (1951) C: Unknown

869 R *Caudellia nigrella* (Hulst, 1890) Jul – B g
T: Heinrich (1956), Neunzig (1990)
L: Bowman (1951) C: UASM

870 * R *Vitula serratilineella* Ragonot, 1887 Jun – Jul – b G
Dried-fruit Moth
T: Neunzig (1990)
L: Neunzig (1990) C: NFRC, OLDS

871 R *Vitula broweri* (Heinrich, 1956) L Jun – Jul – B g
T: Heinrich (1956), Neunzig (1990)
L: Neunzig (1990) C: NFRC

872 * R i *Plodia interpunctella* (Hübner, 1813) Jan – Dec m B g
Indian Meal Moth
T: Heinrich (1956), Neunzig (1990)
L: Bowman (1951), ?Neunzig (1990) C: NFRC, UASM

873 * H I *Ephestia elutella* (Hübner, 1796) [Jan – Dec] – – –
Tobacco Moth
T: Heinrich (1956), Neunzig (1990)
L: Bowman (1951) C: UASM

874 * H i *Ephestia kuehniella* Zeller, 1879 [Jan – Dec] – – –
Mediterranean Flour Moth
T: Heinrich (1956), Neunzig (1990)
L: Bowman (1951), ?Neunzig (1990) C: NFRC, OLDS, UASM

875 * U *Ephestia columbiella* Neunzig, 1990 Jul – B g
T: Heinrich (1956), Neunzig (1990)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: None C: ?NFRC | | | | |
| 875.1 | * | P I | *Cadra cautella* (Walker, 1863) | Jan – Dec | m | b | g |
| | | | Almond Moth | | | | |
| | | | T: Heinrich (1956), Neunzig (1990) | | | | |
| 876 | * | R | *Bandera binotella* (Zeller, 1872) | Aug | – | – | G |
| | | | T: Shaffer (1968), Neunzig (1990) | | | | |
| | | | L: Shaffer (1968), Neunzig (1990) C: Unknown | | | | |
| 877 | * | R | *Bandera virginella* Dyar, 1908 | Jun | – | – | G |
| | | | T: Shaffer (1968), Neunzig (1990) | | | | |
| | | | L: Shaffer (1968), Neunzig (1990) C: UASM | | | | |
| 878 | * | R | *Bandera cupidinella* Hulst, 1888 | M Aug | – | – | G |
| | | | T: Shaffer (1968), Neunzig (1990) | | | | |
| | | | L: None C: CNC | | | | |
| 879 | | R | *Pima fosterella* Hulst, 1888 | Jun | m | – | G |
| | | | T: Heinrich (1956), Neunzig (2003) | | | | |
| | | | L: Heinrich (1956), Neunzig (2003) C: CNC, NFRC | | | | |
| 880 | | R H | *Pima boisduvaliella* (Guenée, 1845) | Jul | – | B | G |
| | | | T: McDunnough (1935b), Heinrich (1956), Neunzig (2003) | | | | |
| | | | L: McDunnough (1935b), Bowman (1951), Heinrich (1956), Neunzig (2003) C: CNC, NFRC, OLDS, UASM | | | | |
| 881 | * | R | *Pima fulvirugella* (Ragonot, 1887) | Jun – Jul | M | b | G |
| | | | T: McDunnough (1935b), Heinrich (1956), Neunzig (2003) | | | | |
| | | | L: McDunnough (1935b), Bowman (1951), Heinrich (1956), Neunzig (2003) C: CNC, OLDS, UASM | | | | |
| 882 | * | R | *Pima albocostalialis* (Hulst, 1886) | Jun – Jul | – | – | G |
| | | | T: McDunnough (1935b), Heinrich (1956), Neunzig (2003) | | | | |
| | | | L: McDunnough (1935b), Bowman (1951), Heinrich (1956), Neunzig (2003) C: CNC, NFRC, UASM | | | | |
| 883 | * | R | *Interjectio columbiella* (McDunnough, 1935) | Jul | – | – | G |
| | | | T: McDunnough (1935b), Heinrich (1956), Neunzig (2003) | | | | |
| | | | L: Bowman (1951), Heinrich (1956), Neunzig (2003) C: CNC | | | | |
| 884 | | R | *Interjectio niviella* (Hulst, 1888) | Jul | m | – | G |
| | | | T: Heinrich (1956), Neunzig (2003) | | | | |
| | | | L: Bowman (1951), Neunzig (2003) C: CNC, NFRC, OLDS, UASM | | | | |
| 885 | | R | *Ambesa laetella* Grote, 1880 | Jun – Jul | M | – | G |

T: Heinrich (1956), Neunzig (2003)
L: Bowman (1951), Heinrich (1956), Neunzig (2003) C: AGRL, CNC, NFRC, OLDS, UASM

886 R *Catastia incorruscella* (Hulst, 1895) Jun – Jul M – g
T: Heinrich (1956), Neunzig (2003)
L: Bowman (1951) C: Unknown

887 R *Catastia actualis* (Hulst, 1886) Jun – Jul m – G
T: Heinrich (1956), Neunzig (2003)
L: Bowman (1951), Neunzig (2003) C: CNC, NFRC, UASM

888 * R *Ortholepis pasadamia* (Dyar, 1917) Jul m B –
Striped Birch Pyralid
T: Heinrich (1956), Neunzig (2003)
L: Bowman (1951), Prentice (1965) C: CNC, NFRC, UASM

889 * R *Polopeustis arctiella* (Gibson, 1920) Jul M – –
T: McDunnough (1935b), Heinrich (1956), Neunzig (2003)
L: McDunnough (1935b), Bowman (1951), Lafontaine and Wood (1997) C: CNC, UASM

890 R *Meroptera pravella* (Grote, 1878) May – Jun m B g
Lesser Aspen Webworm
T: Heinrich (1956), Neunzig (2003)
L: Bowman (1951), Heinrich (1956), Prentice (1965), Neunzig (2003) C: CNC, NFRC, OLDS, UASM

890.1 * P *Meroptera abditiva* Heinrich, 1956 Jun – B g
T: Heinrich (1956), Neunzig (2003)

891 R *Sciota basilaris* (Zeller, 1872) May – Jul – B g
T: Heinrich (1956), Neunzig (2003)
L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

892 * R *Sciota levigatella* (Hulst, 1892) Jun – Jul M B g
T: Neunzig (2003)
L: [Bowman (1951)], Neunzig (2003) C: NFRC, UASM

893 R *Sciota fernaldi* (Ragonot, 1887) May – Jul – – G
T: Heinrich (1956), Neunzig (2003)
L: Bowman (1951), Neunzig (2003) C: CNC, UASM

894 * R *Sciota rubescentella* (Hulst, 1900) Jun – Jul – – G
T: Heinrich (1956), Neunzig (2003)
L: None C: CNC, ?NFRC

895 * R *Tulsa umbripennis* (Hulst, 1895) Jun M – –
T: Heinrich (1956), Neunzig (2003)
L: Bowman (1951) C: CNC, NFRC

896 * R *Telethusia ovalis* (Packard, 1873) Jun – Jul M – g

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | T: Heinrich (1956), Neunzig (2003)<br>L: Bowman (1951), Heinrich (1956), Neunzig (2003) C: CNC, UASM | | | | | |
| 897 | * | R | *Pyla fasciolalis* (Hulst, 1886)<br>T: Heinrich (1956), Wilterding and Balogh (2002), Neunzig (2003)<br>L: Bowman (1951), Wilterding and Balogh (2002) C: Unknown | Jul – Aug | M | – | – |
| 898 | | R | *Pyla impostor* Heinrich, 1956<br>T: Heinrich (1956), Wilterding and Balogh (2002), Neunzig (2003)<br>L: Heinrich (1956), Wilterding and Balogh (2002), Neunzig (2003) C: CNC | Jul | M | – | G |
| 899 | * | R | *Pyla aequivoca* Heinrich, 1956<br>T: Heinrich (1956), Balogh and Wilterding (1998), Wilterding and Balogh (2002), Neunzig (2003)<br>L: Heinrich (1956), Balogh and Wilterding (1998) C: CNC | L Jun – E Aug | M | – | – |
| 900 | | R | *Pyla insinuatrix* Heinrich, 1956<br>T: Heinrich (1956), Wilterding and Balogh (2002), Neunzig (2003)<br>L: Wilterding and Balogh (2002), Neunzig (2003) C: Unknown | Jul – Aug | M | – | – |
| 901 | | R | *Pyla aenigmatica* Heinrich, 1956<br>T: Heinrich (1956), Wilterding and Balogh (2002), Neunzig (2003)<br>L: Pohl et al. (2005) C: NFRC | E Jul | M | – | G |
| 902 | * | R | *Pyla criddlella* Dyar, 1907<br>T: Heinrich (1956), Wilterding and Balogh (2002), Neunzig (2003)<br>L: Bowman (1951), Wilterding and Balogh (2002), ?Neunzig (2003) C: CNC, NFRC, UASM | May – Jun | M | B | – |
| 903 | | R H | *Pyla fusca* (Haworth, 1828)<br>T: Heinrich (1956), Wilterding and Balogh (2002), Neunzig (2003)<br>L: Bowman (1951), Heinrich (1956), Wilterding and Balogh (2002), Neunzig (2003) C: CNC, NFRC, OLDS, UASM | May – Sep | M | b | g |
| 904 | * | R | *Pyla hanhamella* Dyar, 1904<br>T: Heinrich (1956), Wilterding and Balogh (2002), Neunzig (2003)<br>L: Wilterding and Balogh (2002) C: CNC | Jun – Jul | M | – | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 905 | * | R | *Pyla aeneoviridella* Ragonot, 1887<br>T: Heinrich (1956), Neunzig (2003)<br>L: Bowman (1951), Heinrich (1956) C: NFRC, UASM | Aug | M | – | g |
| 906 | * | R | *Dioryctria abietivorella* (Grote, 1878)<br>Fir Coneworm<br>T: Heinrich (1956), Munroe (1959), Roe (2001), Neunzig (2003)<br>L: Bowman (1951), Munroe (1959), Prentice (1965), Roe (2001) C: CNC, NFRC, OLDS, UASM | Jul | M | – | – |
| 907 | * | R | *Dioryctria reniculelloides* Mutuura and Munroe, 1973<br>Spruce Coneworm<br>T: Heinrich (1956), Mutuura and Munroe (1973), Roe (2001), Neunzig (2003)<br>L: Bowman (1951), Mutuura and Munroe (1973), Roe (2001), Neunzig (2003), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun – Aug | M | B | g |
| 907.1 | * | P | *Dioryctria pseudotsugella* Munroe, 1959<br>T: Mutuura and Munroe (1973), Neunzig (2003) | Jul | M | – | – |
| 908 | | R | *Dioryctria zimmermani* (Grote, 1877)<br>Zimmerman Pine Moth<br>T: Heinrich (1956), Munroe (1959), Neunzig (2003)<br>L: None C: NFRC | Jun – Jul | m | B | g |
| 909 | | R | *Dioryctria cambiicola* (Dyar, 1914)<br>Western Pine Moth<br>T: Heinrich (1956), Mutuura et al. (1969), Roe (2001), Neunzig (2003)<br>L: Ives and Wong (1988), Roe (2001) C: Unknown | Aug | M | – | – |
| 910 | | R | *Dioryctria banksiella* Mutuura, Munroe and Ross, 1969<br>T: Mutuura et al. (1969), Mutuura (1982b), Roe (2001), Neunzig (2003)<br>L: Mutuura et al. (1969), Mutuura (1982b), Roe (2001), Neunzig (2003) C: CNC, NFRC | Jul – Aug | – | B | – |
| 911 | | R | *Dioryctria contortella* Mutuura, Munroe and Ross, 1969<br>T: Mutuura et al. (1969), Roe (2001), Neunzig (2003)<br>L: Mutuura et al. (1969), Roe (2001) C: CNC | Jul – Aug | M | – | – |
| 911.1 | * | P | *Philodema rhoiella* (Dyar, 1903)<br>T: Heinrich (1956), Neunzig (2003) | Jul – Aug | M | – | – |
| 912 | | R | *Sarata caudellella* (Dyar, 1904)<br>T: Heinrich (1956), B. Landry (1998), Neunzig (2003)<br>L: Bowman (1951), B. Landry (1998), Neunzig (2003) C: CNC, UASM | May | – | b | G |
| 913 | * | R | *Sarata edwardsialis* (Hulst, 1886) | Apr – May | – | – | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | T: Heinrich (1956), Neunzig (2003)<br>L: None C: CNC | | | | | |
| 914 | * | R | *Sarata punctella* (Dyar, 1915)<br>T: Heinrich (1956), Neunzig (2003)<br>L: None C: CNC | Jul | – | b | G |
| 915 | * | R | *Lipographis fenestrella* (Packard, 1873)<br>T: Heinrich (1956), Neunzig (2003)<br>L: Pohl et al. (2005) C: NFRC | M Aug – L Aug | – | b | G |
| 916 | | R | *Dasypyga alternosquamella* Ragonot, 1887<br>T: Heinrich (1956)<br>L: Pohl et al. (2005) C: NFRC | Jun – Jul | – | B | – |
| 916.1 | * | P | *Etiella zinckenella* (Treitschke, 1832)<br>Limabean Pod Borer<br>T: Heinrich (1956) | Jun | – | – | G |
| 917 | | R | *Staudingeria albipenella* (Hulst, 1887)<br>T: Heinrich (1956)<br>L: Bowman (1951) C: CNC, UASM | Jun – Jul | M | b | G |
| 918 | | R | *Hulstia undulatella* (Clemens, 1860)<br>T: Heinrich (1956)<br>L: Kearfott (1905), Bowman (1951), Heinrich (1956) C: CNC, NFRC, OLDS, UASM | Jul – Aug | M | b | G |
| 919 | * | R | *Rostrolaetilia placidissima* Blanchard and Ferguson, 1975<br>T: Blanchard and Ferguson (1975), Neunzig (1997)<br>L: None C: UASM | E Sep | – | – | G |
| 920 | * | R H | *Zophodia grossulariella* (Hübner, 1809)<br>Gooseberry Fruitworm<br>T: Heinrich (1956), Neunzig (1997)<br>L: Bowman (1951), Heinrich (1956), ?Neunzig (1997), Pohl et al. (2004b) C: NFRC, OLDS, UASM | Apr – May | m | B | g |
| 921 | | R | *Melitara dentata* (Grote, 1876)<br>T: Heinrich (1956), Neunzig (1997), Simonsen et al. (2009)<br>L: Bowman (1951), Neunzig (1997), Simonsen et al. (2009) C: AGRL, CNC, NFRC, OLDS, UASM | Aug | – | – | G |
| 922 | * | R | *Melitara subumbrella* (Dyar, 1925)<br>T: Heinrich (1956), Neunzig (1997), Simonsen et al. (2009)<br>L: Bowman (1951), Simonsen et al. (2009) C: CNC, NFRC, UASM | May | – | – | G |
| 923 | | R | *Homoeosoma electella* (Hulst, 1887)<br>Sunflower Moth<br>T: Heinrich (1956), Neunzig (1997)<br>L: Bowman (1951), Neunzig (1997) C: CNC, NFRC, UASM | Jun – Jul | m | – | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 924 | * | R | *Homoeosoma stypticellum* Grote, 1878<br>T: Heinrich (1956), Neunzig (1997)<br>L: Bowman (1951), Neunzig (1997) C: CNC, UASM | Jun – Jul | – | b | g |
| 925 | | R | *Homoeosoma illuviellum* Ragonot, 1888<br>T: Heinrich (1956), Neunzig (1997)<br>L: Bowman (1951) C: CNC, UASM | Jun | m | – | G |
| 926 | | R | *Homoeosoma impressale* Hulst, 1886<br>T: Heinrich (1956), Neunzig (1997)<br>L: Bowman (1951) C: NFRC | Jul | – | – | G |
| 927 | | R | *Homoeosoma ardaloniphas* Goodson and Neunzig, 1993<br>T: Neunzig (1997)<br>L: Neunzig (1997) C: CNC | M Jul | – | – | G |
| 928 | * | R | *Phycitodes mucidella* (Ragonot, 1887)<br>T: Heinrich (1956), Neunzig (1997)<br>L: Bowman (1951), Neunzig (1997) C: CNC, NFRC, OLDS, UASM | Jun – Oct | M | b | G |
| **Anerastiini** | | | | | | | |
| 929 | | R | *Ragonotia dotalis* (Hulst, 1886)<br>T: Shaffer (1968)<br>L: Bowman (1951) C: Unknown | Apr – May | – | – | G |
| 930 | | R | *Anerastia lotella* (Hübner, 1813)<br>T: Shaffer (1968)<br>L: Bowman (1951), Shaffer (1968) C: CNC, NFRC, OLDS, UASM | Jun – Jul | – | b | G |
| 931 | | R | *Coenochroa californiella* Ragonot, 1887<br>T: Shaffer (1968)<br>L: Bowman (1951) C: UASM | Jun | – | – | G |
| 932 | * | R | *Coenochroa illibella* (Hulst, 1887)<br>T: Shaffer (1968)<br>L: Shaffer (1968) C: CNC, UASM | Jul | – | – | G |
| **Peoriini** | | | | | | | |
| 933 | | R | *Peoria approximella* (Walker, 1866)<br>T: Shaffer (1968)<br>L: Bowman (1951), Shaffer (1968) C: CNC, NFRC, OLDS | L Jun – E Aug | – | – | G |

## *46. Crambidae – snout moths*

A diverse family of moths that until recently was considered to be a subfamily of Pyralidae. They can be separated from all other moths except the Pyralidae by the presence of tympanal chambers on the base of the abdomen, in the space between the thorax and abdomen. They can be separated from the Pyralidae by having a broad opening of the tympanal chambers, and the presence of a large flap (the praecinctorum) over the tympana, between the thorax

and abdomen. Several crambid species in a number of subfamilies superficially resemble noctuids but can be easily distinguished from them by the scaled proboscis (in all Pyraloidea). Larvae of most species are borers or concealed feeders of plants. Many species feed on primitive plants such as mosses, rushes, and grasses. Several species are pests of cereal crops.

Over 11 000 species of crambids are known worldwide. In North America, 770 species are known, 121 of which are reported herein from AB. The arrangement of subfamilies, tribes, and genera presented here follows Munroe et al. (1995).

### 46.1. Scopariinae

Small (10–30 mm wingspan) moths with brown and white or black and white triangular forewings. They can be separated from other Crambidae by the presence of indistinct black scale tufts on the forewings. Larvae are borers or leaf webbers of primitive or higher plants.

Four hundred and seventy-nine species of Scopariinae are known worldwide, from all regions. Thirty-seven species are known in North America, six of which are reported from AB. The group was revised by Munroe (1972a).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 934 | * | R h | *Gesneria centuriella* ([Denis and Schiffermüller], 1775)<br>T: Munroe (1972a)<br>L: Kearfott (1905), Bowman (1951), Munroe (1972a)<br>C: AGRL, CNC, NFRC, OLDS, UASM | Jun – Jul | M | B | G |
| 935 | * | R | *Scoparia biplagialis* Walker, 1866<br>T: Munroe (1972a)<br>L: ?Munroe (1972a), Pohl et al. (2004b) C: NFRC, OLDS, UASM | M Jul – E Aug | m | B | – |
| 936 | * | U | *Scoparia basalis* Walker, 1866<br>T: Munroe (1972a)<br>L: Bowman (1951) C: ?CNC, ?UASM | Jul | M | b | g |
| 937 | | R | *Eudonia albertalis* (Dyar, 1929)<br>T: Munroe (1972a)<br>L: Bowman (1951), Munroe (1972a), Pohl et al. (2004b) C: CNC, NFRC, OLDS | Jul | M | B | – |
| 938 | | R | *Eudonia spaldingalis* (Barnes and McDunnough, 1912)<br>T: Munroe (1972a)<br>L: Munroe (1972a) C: CNC, NFRC | Jul | M | – | – |
| 939 | * | R | *Eudonia lugubralis* (Walker, 1866)<br>T: Munroe (1972a)<br>L: Bowman (1951), Munroe (1972a), Lafontaine and Wood (1997) C: CNC, ?NFRC, UASM | Jun – Aug | M | B | g |

### 46.2. Crambinae – grass moths

Small to medium-sized (10–35 mm wingspan) moths with elongate palps, narrow triangular forewings, and fan-shaped hindwings. Most species have forewings marked

with longitudinal dark and light marks. Adults generally rest head downward, with their wings rolled into a tight tube. Larvae are stem borers or root feeders, predominantly on grasses. Several species are turf pests.

Approximately 1900 species of Crambinae are known worldwide. One hundred and ninety-three species are known in North America, 45 of which are reported from AB. The group is in need of a modern species-level revision, and useful references are scattered. Landry (1995) revised the tribes and genera. Fernald (1896) and Kearfott (1908) provided the most recent coverage of many species; other groups have been treated more recently by Klots (1940, 1942, 1968, 1970), Capps (1965, 1966), and Bleszynski (1970).

**Ancylolomiini**

940 * R *Pseudoschoenobius opalescalis* (Hulst, 1886) Jul – – G
T: Fernald (1896)
L: Bowman (1951) C: CNC, UASM

**Haimbachiini**

941 R *Occidentalia comptulatalis* (Hulst, 1886) Jul – B g
T: Fernald (1896)
L: Bowman (1951) C: NFRC, OLDS, UASM

**Crambini**

942 * R *Euchromius californicalis* (Packard, 1873) L Jun – E Aug – b G
T: Capps (1966)
L: [Bowman (1951)] C: CNC, NFRC, OLDS, UASM

943 * R *Platytes vobisne* Dyar, 1920 L Jun – – G
T: Landry (1995)
L: Pohl et al. (2005) C: NFRC

944 R H *Catoptria trichostomus* (Christoph, 1858) L Jun – Jul M B –
T: Fernald (1896)
L: Lafontaine and Wood (1997) C: CNC, NFRC

945 * R H *Catoptria maculalis* (Zetterstedt, 1840) M Jul – B –
L: Pohl et al. (2005) C: NFRC

946 R *Catoptria latiradiellus* (Walker, 1863) Jul – E Aug M B g
T: Fernald (1896), Klots (1940)
L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

947 R *Catoptria oregonica* (Grote, 1880) Jul – E Aug M – –
T: Fernald (1896)
L: Bowman (1951) C: CNC, OLDS, UASM

948 * R *Chrysoteuchia topiarius* (Zeller, 1866) Jun – Jul M B G
Cranberry Girdler
T: Fernald (1896), Landry (1995)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Landry (1995) C: CNC, NFRC, OLDS, PMAE, UASM | | | | | |
| 949 | | R H | *Crambus pascuella* (Linnaeus, 1758) T: Fernald (1896), Klots (1940) L: Kearfott (1905), ?Klots (1940), Bowman (1951) C: CNC, OLDS, UASM | Jul | | – | b | G |
| 950 | * | R h | *Crambus hamella* (Thunberg, 1794) T: Fernald (1896) L: Bowman (1951) C: CNC, UASM | Aug | | M | – | – |
| 951 | * | R h | *Crambus alienellus* (Zincken, 1817) T: Fernald (1896) L: Bowman (1951) C: CNC, NFRC, UASM | Jun – Jul | | M | B | – |
| 952 | | R | *Crambus bidens* Zeller, 1872 T: Fernald (1896), Kearfott (1908), Klots (1940) L: Bowman (1951) C: NFRC, UASM | Aug | | – | B | – |
| 953 | | R H | *Crambus perlella* (Scopoli, 1763) T: Fernald (1896) L: Kearfott (1905), Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul – Aug | | M | B | g |
| 954 | | R | *Crambus unistriatellus* Packard, 1867 T: Fernald (1896), Klots (1940) L: Bowman (1951) C: NFRC, OLDS, UASM | Jun – Jul | | M | B | g |
| 955 | * | R | *Crambus whitmerellus* Klots, 1942 T: Fernald (1896), Klots (1942) L: Fernald (1896), Klots (1942), Bowman (1951) C: CNC, NFRC, OLDS, UASM | Jul – Aug | | M | B | g |
| 956 | | R | *Crambus awemellus* McDunnough, 1921 T: McDunnough (1921) L: Bowman (1951) C: CNC, UASM | Jun – Jul | | – | B | g |
| 957 | | R | *Crambus trichusalis* Hulst, 1886 T: Kearfott (1908) L: Kearfott (1908), Bowman (1951) C: CNC, NFRC, OLDS, UASM | Aug | | m | – | G |
| 958 | * | R | *Crambus cockleellus* Kearfott, 1908 T: Kearfott (1908) L: Bowman (1951) C: CNC | Aug | | M | – | – |
| 959 | | R | *Crambus ainsliellus* Klots, 1942 T: Klots (1942) L: Bowman (1951) C: NFRC, OLDS, UASM | Aug | | – | B | G |
| 960 | | R | *Crambus praefectellus* (Zincken, 1821) T: Fernald (1896) L: Bowman (1951) C: OLDS | Sep | | – | B | g |
| 961 | | R | *Crambus leachellus* (Zincken, 1818) | Aug – M Sep | | – | B | g |

T: Fernald (1896), Klots (1940)
L: Pohl et al. (2004b) C: CNC, NFRC, OLDS

962 R *Crambus occidentalis* Grote, 1880 Aug – Sep – b G
T: Fernald (1896), Klots (1940)
L: Bowman (1951) C: UASM

963 R *Crambus girardellus* Clemens, 1860 Jun – Jul – B g
T: Fernald (1896)
L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

964 * R *Raphiptera argillaceellus* (Packard, 1867) Jun – Jul m B –
T: Fernald (1896), Landry (1995)
L: Bowman (1951) C: CNC, NFRC

965 * R H *Agriphila biarmicus* (Tengström, 1865) Jul M B –
T: McDunnough (1925b)
L: McDunnough (1925b), Bowman (1951) C: CNC, UASM

966 * R *Agriphila plumbifimbriellus* (Dyar, 1904) Jun – Aug M – –
L: Kearfott (1905), Bowman (1951) C: CNC, NFRC, ?OLDS, ?UASM

967 * R *Agriphila ruricolellus* (Zeller, 1863) Jul – Aug M B g
T: Fernald (1896)
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM

968 * R *Agriphila vulgivagellus* (Clemens, 1860) Aug – B G
Vagabond Crambus
T: Fernald (1896)
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM

969 * R *Agriphila attenuatus* (Grote, 1880) E Sep – b G
T: Fernald (1896)
L: None C: UASM

970 R *Neodactria luteolellus* (Clemens, 1860) Jul m B g
T: Fernald (1896)
L: Bowman (1951) C: CNC, NFRC, UASM

971 R *Neodactria zeellus* (Fernald, 1885) Jun M – G
T: Fernald (1896)
L: Bowman (1951) C: UASM

972 R *Neodactria caliginosellus* (Clemens, 1860) Jul – B G
T: Fernald (1896)
L: Bowman (1951) C: UASM

973 * R *Neodactria murellus* (Dyar, 1904) M Jul M – G
T: Kearfott (1908)
L: None C: CNC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 974 | * | R h | *Pediasia aridella* (Thunberg, 1788)<br>T: McDunnough (1923b)<br>L: McDunnough (1923b), Bowman (1951) C: CNC, UASM | Jul – Aug | M | b | G |
| 975 | | R H | *Pediasia truncatellus* (Zetterstedt, 1840)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | Jun | M | b | g |
| 976 | | R | *Pediasia trisecta* (Walker, 1856)<br>T: Fernald (1896)<br>L: Bowman (1951) C: AGRL, CNC, NFRC, OLDS, PMAE, UASM | Jul – Sep | – | B | G |
| 977 | | R | *Pediasia laciniellus* (Grote, 1880)<br>T: Fernald (1896)<br>L: Bowman (1951) C: CNC, UASM | Jul – Aug | M | b | G |
| 978 | | R | *Pediasia ericellus* (Barnes and McDunnough, 1918)<br>L: None C: NFRC | Jul | – | b | g |
| 979 | | R | *Pediasia abnaki* (Klots, 1942)<br>T: Klots (1942)<br>L: Pohl et al. (2005) C: NFRC, OLDS | Jun – Jul | – | B | g |
| 980 | | R | *Pediasia dorsipunctellus* (Kearfott, 1908)<br>T: Kearfott (1908)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, ?OLDS, UASM | Jul – M Aug | m | B | g |
| 981 | * | R | *Loxocrambus awemensis* McDunnough, 1929<br>T: McDunnough (1929a)<br>L: None C: CNC, UASM | Jul | – | – | G |
| 982 | | R | *Tehama bonifatella* (Hulst, 1887)<br>Western Lawn Moth<br>T: Fernald (1896), Kearfott (1908), Landry (1995)<br>L: Bowman (1951), Landry (1995) C: CNC, NFRC, OLDS, UASM | Jun – Jul | M | b | G |
| 983 | | R | *Thaumatopsis pexellus* (Zeller, 1863)<br>T: Fernald (1896), Kearfott (1908)<br>L: Bowman (1951) C: AGRL, CNC, NFRC, UASM | Aug | M | b | G |
| 984 | | R | *Thaumatopsis fernaldella* Kearfott, 1905<br>T: Kearfott (1905)<br>L: Kearfott (1905), Bowman (1951) C: CNC, OLDS, UASM | Jul | – | – | G |

### 46.3. Schoenobiinae

Small (15–30 mm wingspan) moths, usually with elongate forewings. Adults have a reduced proboscis. Very large, porrect labial palps generally separate these moths from other Crambidae. Larvae are borers on aquatic grasses.

Approximately 170 species of Schoenobiinae are known worldwide, primarily from temperate and tropical areas. Twenty-five species are known in North America, two of which are reported in AB. The group is in need of revision, as there have been no species-level treatments within the past century.

985 * R *Donacaula melinellus* (Clemens, 1860) — L Jun – E Aug — – B g
L: Bowman (1951) C: NFRC, OLDS, UASM

986 * U *Donacaula longirostrallus* (Clemens, 1860) — Jul — – b g
L: [Bowman (1951)] C: ?NFRC, ?OLDS, ?UASM

### 46.4. Acentropinae

Small to medium-sized (12–35 mm wingspan) moths with delicate bodies and legs, often with distinct transverse bands on the forewings. Larvae are aquatic and feed on aquatic plants.

Approximately 720 species of Acentropinae are known worldwide, primarily from temperate and tropical regions. Fifty-two species are known in North America, seven of which are reported from AB. Until recently, this subfamily was known as the Nymphulinae; the name was changed to the older name Acentropinae when the genus *Acentria* was transferred to the group by Speidel (1984). The group, excluding the Acentropini, was revised by Munroe (1972a).

**Acentropini**

987 * R I *Acentria ephemerella* ([Denis and Schiffermüller], 1775) — E Jul – M Sep — – b g
T: Scholtens and Balogh (1996)
L: Pohl et al. (2005) C: NFRC, OLDS

**Nymphulini**

988 * R *Elophila icciusalis* (Walker, 1859) — Jul – Aug — – B g
T: Munroe (1972a)
L: Pohl et al. (2005) C: NFRC, OLDS

989 * R *Elophila obliteralis* (Walker, 1859) — L Jun – E Aug — – B g
T: Munroe (1972a)
L: Bowman (1951), Pohl et al. (2004b) C: NFRC, OLDS, UASM

990 R *Parapoynx maculalis* (Clemens, 1860) — L Jun – M Aug — – B g
T: Munroe (1972a)
L: Pohl et al. (2004b) C: NFRC, OLDS

**Argyractini**

991 R *Petrophila kearfottalis* (Barnes and McDunnough, 1917) — M Jul – M Aug — – b G
T: Munroe (1972a)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Munroe (1972a) C: AGRL, CNC, NFRC, OLDS, UASM | | | | | |
| 992 | | R | *Petrophila jaliscalis* (Schaus, 1906)<br>T: Munroe (1972a)<br>L: Munroe (1972a) C: Unknown | ? | | – | – | G |
| 993 | * | R | *Petrophila confusalis* (Walker, 1866)<br>T: Munroe (1972a)<br>L: None C: NFRC | Jul – Aug | | – | – | G |

### 46.5. Odontiinae

Minute to small (8–25 mm wingspan) moths with triangular wings, similar superficially to species in the subfamily Pyraustinae. No external features readily distinguish these moths from all of the other Crambinae. Larvae feed on a variety of plants, usually in a concealed manner.

Approximately 370 species of Odontiinae are known worldwide, from all regions. Fifty-seven species are known in North America, one of which is known in AB. The group was revised by Munroe (1972b).

**Eurrhypini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 994 | * | R | *Mimoschinia rufofascialis* (Stephens, 1834)<br>T: Munroe (1972b)<br>L: Bowman (1951), Munroe (1972b) C: CNC, NFRC, OLDS, UASM | Jun – Jul | | m | b | G |

### 46.6. Evergestinae

Small to medium-sized (10–35 mm wingspan) moths with relatively broad, usually triangular forewings and fan-shaped hindwings. They are superficially similar to species in the subfamily Pyraustinae; no easily observed characters separate them from all of the other Crambidae. Larvae are web makers that feed on Brassicaceae and Capparidaceae.

Approximately 140 species of Evergestinae are known worldwide, with the center of diversity in the Holarctic region. Thirty-seven species are known from North America; 11 of these are reported from AB. The group was revised by Munroe (1973a).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 995 | * | R I? | *Evergestis pallidata* (Hufnagel, 1767)<br>Purple-backed Cabbageworm<br>T: Munroe (1973a)<br>L: Bowman (1951), Munroe (1973a), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | Jun – Jul | | m | b | g |
| 996 | | R | *Evergestis simulatilis* (Grote, 1880)<br>T: Munroe (1973a)<br>L: Bowman (1951), ?Munroe (1973a) C: CNC, NFRC, UASM | Jul | | M | B | – |
| 997 | * | R | *Evergestis vinctalis* Barnes and McDunnough, 1914 | May | | – | – | G |

T: Munroe (1973a)
L: Bowman (1951) C: UASM

998 * R *Evergestis obscuralis* Barnes and McDunnough, 1914 Jun M – –
T: Munroe (1973a)
L: Bowman (1951), Munroe (1973a) C: CNC

999 * U *Evergestis funalis* (Grote, 1878) L Aug M – –
T: Munroe (1973a)
L: None C: ?UASM

1000 R *Evergestis subterminalis* Barnes and McDunnough, 1914 Jul M – –
T: Munroe (1973a)
L: Bowman (1951), Munroe (1973a) C: CNC, NFRC, UASM

1001 * R *Prorasea simalis* Grote, 1878 M Jul – – G
T: Munroe (1973a)
L: Kearfott (1905), Bowman (1951) C: UASM

1002 R *Prorasea praeia* (Dyar, 1917) May – Jun M – G
T: Munroe (1973a)
L: Munroe (1973a) C: CNC

1003 R *Cylindrifrons succandidalis* (Hulst, 1886) Jul – – G
T: Munroe (1973a)
L: Bowman (1951) C: NFRC, UASM

1004 R *Orenaia trivialis* Barnes and McDunnough, 1914 Jul M – –
T: Munroe (1973a)
L: Munroe (1973a) C: CNC

1005 * R *Orenaia alticolalis* (Barnes and McDunnough, 1914) L Jun M – –
T: Munroe (1973a)
L: ?Munroe (1973a) C: CNC, NFRC

### *46.7. Pyraustinae*

A large group of mostly small to medium-sized (most 10–35 mm wingspan, with a few species up to 60 mm) moths with broad, triangular forewings and fan-shaped hindwings. Most species have long narrow bodies, with the abdomen usually extending beyond the anal angles of the hindwings. Larvae of most species are leaf webbers or stem and fruit borers; a number of species are important crop pests, including the European Corn Borer (*Ostrinia nubilalis*).

Approximately 7400 species of Pyraustinae are known from all regions of the world. The center of diversity is in temperate and tropical Asia. Three hundred and sixty-nine species are known in North America; 49 of these are reported in AB. The Pyraustine tribe Pyraustini was revised by Munroe (1976a, 1976b). The remaining North American species are placed in the tribe Spilomelini. The higher taxonomy of the Spilomelini was revised by Munroe et al. (1995), which is followed here. The Spi-

lomelini is in need of species-level revision, but some genera have been given modern treatment by Munroe (1952, 1955, 1956a, 1956b, 1956c, 1966, 1973b).

**Pyraustini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1006 | | R | *Saucrobotys fumoferalis* (Hulst, 1886)<br>T: Munroe (1976a)<br>L: Bowman (1951), ?Munroe (1976a) C: CNC, NFRC, UASM | May – Jul | – | B | g |
| 1007 | * | R | *Saucrobotys futilalis* (Lederer, 1863)<br>T: Munroe (1976a)<br>L: Munroe (1976a) C: CNC, NFRC, UASM | M Jun – Jul | – | B | g |
| 1008 | | R | *Ostrinia penitalis* (Grote, 1876)<br>T: Mutuura and Munroe (1970), Munroe (1976a)<br>L: Mutuura and Munroe (1970), ?Munroe (1976a) C: CNC | Jul | – | – | G |
| 1009 | | R | *Ostrinia marginalis* (Walker, 1866)<br>T: Mutuura and Munroe (1970), Munroe (1976a)<br>L: Bowman (1951), Mutuura and Munroe (1970), Munroe (1976a), Lafontaine and Wood (1997) C: CNC, NFRC, UASM | L May – L Jul | M | B | g |
| 1010 | * | R | *Ostrinia nubilalis* (Hübner, 1796)<br>European Corn Borer<br>T: Mutuura and Munroe (1970), Munroe (1976a), Allyson (1981)<br>L: ?Munroe (1976a), ?Allyson (1981), Struble et al. (1987) C: POHL | L Jun – L Jul | – | – | G |
| 1011 | | R | *Fumibotys fumalis* (Guenée, 1854)<br>T: Munroe (1976a), Allyson (1981)<br>L: Bowman (1951), ?Munroe (1976a), ?Allyson (1981) C: CNC, UASM | Jul – Aug | – | B | g |
| 1012 | | R | *Perispasta caeculalis* Zeller, 1875<br>T: Munroe (1976a)<br>L: Bowman (1951), ?Munroe (1976a), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun – Jul | – | B | g |
| 1013 | * | R h | *Anania coronata* (Hufnagel, 1767)<br>T: Munroe (1976a), Allyson (1981)<br>L: Bowman (1951), ?Munroe (1976a), ?Allyson (1981), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jun – M Jul | m | B | g |
| 1014 | * | R | *Anania extricalis* (Guenée, 1854)<br>T: Munroe (1976a)<br>L: Bowman (1951), Prentice (1965), Munroe (1976a) C: NFRC, UASM | Jul | m | B | – |
| 1015 | * | R | *Anania mysippusalis* (Walker, 1859) | May – Jul | – | B | g |

T: Munroe (1976a), Allyson (1981)
L: Bowman (1951), ?Munroe (1976a), ?Allyson (1981) C: AGRL, CNC, NFRC, OLDS, UASM

1016 * R h *Anania funebris* (Ström, 1768) Jun – Jul m B g
T: Munroe (1976a), Allyson (1981)
L: Bowman (1951), ?Munroe (1976a), ?Allyson (1981) C: CNC, NFRC, OLDS, PMAE, UASM

1017 * S *Achyra bifidalis* (Fabricius, 1794) Jun – Aug – – G
T: Munroe (1976a), Allyson (1981)
L: Munroe (1976a), Allyson (1981) C: UASM

1018 R *Sitochroa chortalis* (Grote, 1873) May – Aug m b G
T: Munroe (1976a), Allyson (1976)
L: Bowman (1951), Allyson (1976), ?Munroe (1976a) C: CNC, NFRC, OLDS, UASM

1019 R *Loxostege lepidalis* (Hulst, 1886) L Jun – Aug – – G
T: Munroe (1976a)
L: Munroe (1976a) C: CNC, NFRC, OLDS, UASM

1020 R *Loxostege indentalis* (Grote, 1883) Jun – Jul – – G
T: Munroe (1976a)
L: Bowman (1951) C: Unknown

1021 * R H *Loxostege sticticalis* (Linnaeus, 1761) May – Aug m b G
Beet Webworm
T: Munroe (1976a), Allyson (1976)
L: Kearfott (1905), Bowman (1951), Allyson (1976), ?Munroe (1976a) C: AGRL, CNC, NFRC, OLDS, PMAE, UASM

1022 * R *Loxostege anartalis* (Grote, 1877) May – Jun M – G
T: Munroe (1976a)
L: Bowman (1951), Munroe (1976a) C: CNC, NFRC, UASM

1023 * R H *Loxostege ephippialis* (Zetterstedt, 1839) Jun – Jul M – –
T: Munroe (1976a)
L: Bowman (1951), Munroe (1976a) C: UASM

1024 * R H *Loxostege commixtalis* (Walker, 1866) Jun – Aug – B –
T: Munroe (1976a)
L: ?Munroe (1976a) C: AGRL, NFRC, UASM

1025 * R *Loxostege cereralis* (Zeller, 1872) Jun m B G
Alfalfa Webworm
T: Allyson (1976), Munroe (1976a)
L: [Bowman (1951)], Allyson (1976), ?Munroe (1976a) C: CNC, NFRC, OLDS, PMAE, UASM

1026 R *Pyrausta nicalis* (Grote, 1878) Jun – Aug m B g
T: Munroe (1976b)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), ?Munroe (1976b), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | | | | | |
| 1027 | | R | *Pyrausta signatalis* (Walker, 1866)<br>T: Munroe (1976b)<br>L: Bowman (1951) C: CNC, NFRC, ?OLDS, UASM | Jun – Jul | m | b | G |
| 1028 | | R | *Pyrausta generosa* (Grote and Robinson, 1867)<br>T: Munroe (1976b)<br>L: Bowman (1951), Munroe (1976b) C: CNC, UASM | L May – Jul | – | B | g |
| 1029 | | R | *Pyrausta orphisalis* Walker, 1859<br>T: Munroe (1976b), Allyson (1981)<br>L: Kearfott (1905), Bowman (1951), ?Munroe (1976b), ?Allyson (1981) C: CNC, NFRC, UASM | Jun – Jul | M | B | g |
| 1030 | | R | *Pyrausta tuolumnalis* Barnes and McDunnough, 1918<br>T: Munroe (1976b)<br>L: Munroe (1976b) C: NFRC | Jun | M | B | – |
| 1031 | * | R | *Pyrausta subsequalis* (Guenée, 1854)<br>T: Munroe (1976b)<br>L: Bowman (1951), Munroe (1976b) C: NFRC, OLDS, UASM | May – Jul | m | – | G |
| 1032 | * | R | *Pyrausta borealis* Packard, 1867<br>T: Munroe (1976b)<br>L: Munroe (1976b), Pohl et al. (2004b) C: NFRC, PMAE, UASM | May – Jul | M | B | – |
| 1033 | * | R | *Pyrausta scurralis* Hulst, 1886<br>T: Munroe (1976b)<br>L: None C: BIRD | L Jul – E Aug | – | – | G |
| 1034 | * | R | *Pyrausta unifascialis* (Packard, 1873)<br>T: Munroe (1976b), Allyson (1981)<br>L: Kearfott (1905), Bowman (1951), Munroe (1976b), ?Allyson (1981) C: CNC, NFRC, OLDS, UASM | Jul – Aug | M | b | – |
| 1035 | * | R | *Pyrausta fodinalis* (Lederer, 1863)<br>T: Munroe (1951), Munroe (1976b), Allyson (1981)<br>L: Kearfott (1905), Bowman (1951), Munroe (1951), Munroe (1976b), ?Allyson (1981) C: CNC, NFRC, OLDS, UASM | Jun – Jul | M | B | g |
| 1036 | * | R | *Pyrausta socialis* (Grote, 1877)<br>T: Munroe (1951), Munroe (1976b)<br>L: Munroe (1951), Munroe (1976b) C: CNC, NFRC, OLDS | Jul – E Aug | – | b | G |
| **Spilomelini** | | | | | | | | |
| 1037 | * | R | *Diastictis ventralis* (Grote and Robinson, 1867)<br>T: Munroe (1956b)<br>L: Bowman (1951), Munroe (1956b) C: CNC, NFRC | Jul | – | – | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1038 | * | R | *Herpetogramma pertextalis* (Lederer, 1863)<br>T: Allyson (1984)<br>L: Bowman (1951), Allyson (1984) C: UASM | Jun | – | b | G |
| 1039 | | R | *Choristostigma plumbosignalis* (Fernald, 1888)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | Jul – Aug | M | B | g |
| 1040 | * | R | *Choristostigma disputalis* (Barnes and McDunnough, 1917)<br>L: Bowman (1951) C: UASM | Jul | M | – | – |
| 1041 | | R | *Udea rubigalis* (Guenée, 1854)<br>Celery Leaftier<br>T: Munroe (1966)<br>L: Bowman (1951) C: UASM | Jun | M | B | g |
| 1041.1 | * | P | *Udea washingtonalis* (Grote, 1882)<br>T: Munroe (1966) | L Jul | M | – | – |
| 1042 | | R H | *Udea inquinatalis* (Zeller, 1846)<br>T: Munroe (1966)<br>L: Munroe (1966), Lafontaine and Wood (1997) C: NFRC | ? | M | – | – |
| 1043 | * | R | *Udea nordeggensis* (McDunnough, 1929)<br>T: McDunnough (1929a), Munroe (1966)<br>L: McDunnough (1929a), Bowman (1951), Munroe (1966) C: CNC, UASM | L Jun | M | – | – |
| 1044 | * | U | *Udea indistinctalis* Warren, 1892<br>T: Munroe (1966)<br>L: Bowman (1951) C: Unknown | Jul | M | – | – |
| 1045 | * | R | *Udea itysalis* (Walker, 1859)<br>T: Munroe (1966)<br>L: Bowman (1951), Munroe (1966), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – Jul | m | B | g |
| 1046 | * | R | *Udea abstrusa* Munroe, 1966<br>T: Munroe (1966)<br>L: Munroe (1966) C: CNC | M Jul – L Jul | M | b | – |
| 1047 | | R | *Udea radiosalis* (Möschler, 1883)<br>T: Munroe (1966)<br>L: Bowman (1951), Munroe (1966) C: CNC, NFRC, OLDS, UASM | Jul – Aug | M | b | g |
| 1048 | | R | *Desmia funeralis* (Hübner, 1796)<br>Grape Leaf Folder<br>T: Allyson (1984)<br>L: Bowman (1951) C: NFRC, UASM | Jul – Sep | – | B | g |
| 1049 | * | U | *Desmia maculalis* Westwood, 1831<br>L: None C: ?CNC | M Jun | – | – | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1050 | * | R | *Loxostegopsis polle* Dyar, 1917<br>L: None C: NFRC | Sep | – | – | G |
| 1051 | * | R | *Diacme adipaloides* (Grote, 1867)<br>L: [Bowman (1951)] C: NFRC, UASM | May – Jun | – | B | g |
| 1052 | * | R | *Mecyna submedialis* (Grote, 1876)<br>L: Bowman (1951) C: CNC, OLDS | Jul | – | – | G |
| 1053 | | R | *Mecyna mustelinalis* (Packard, 1873)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | Jun – Jul | M | b | g |
| 1054 | * | R | *Nomophila nearctica* Munroe, 1973<br>Celery Stalkworm<br>T: Munroe (1973b)<br>L: [Bowman (1951)], Munroe (1973b) C: AGRL, CNC, NFRC, OLDS, UASM | May – Sep | M | B | G |

## Thyridoidea

### 47. Thyrididae – window-winged moths

Small to medium-sized (12–42 mm wingspan) moths with dark wings that have uneven margins and translucent spots. Larvae are borers or gall makers, or feed from within rolled or tied leaves.

Approximately 760 species of Thyrididae are known worldwide, primarily in tropical and subtropical areas. Ten species are known in North America; one of these has recently been collected in AB. No recent revisions exist for the group, but the AB species can be found in Covell (1984).

**Thyridinae**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1055 | * | R | *Thyris maculata* Harris, 1839<br>T: Covell (1984)<br>L: None C: UASM | M Jun – L Jun | m | – | G |

## Section 2. Butterflies

The butterflies have received considerable attention because of their conspicuous nature. As a result, they are relatively well known, and a vast literature is available for technical and popular audiences. In North America, very few species remain undescribed. However, uncertainty remains about the status of many taxa; some subspecies may prove to be valid species, and there is considerable debate about the status and composition of several genera. As a result, the accepted scientific names of the taxa listed here vary from one publication to another. The higher classification used here is based on Pelham (2008), which is expected to become the standard classification for the forseeable future. The butterflies comprise three superfamilies, the Hesperioidea, the Papilionoidea, and the Hedyloidea, which are phylogenetically embedded within the moths. Approximately 17 500 species are known worldwide; this group is particularly diverse in the tropics. The superfamily Hedyloidea occurs only in Central and South America. About 800 species of butterflies are known in North America north of Mexico; 175 species are reported from AB.

The butterflies of AB have been treated by Bird et al. (1995) and Layberry et al. (1998). A large number of the taxa listed here were also covered in detail by Guppy and Shepard (2001). These references are not listed in the taxonomy sections for the families or the individual species; all three of them are relevant to almost every species listed, and should be consulted in addition to the other references cited.

### Hesperioidea

#### *48. Hesperiidae – skippers*

Skippers are small to medium-sized insects that are distinguished from other butterflies by the combination of three pairs of legs that are all functional for walking and 12 wing veins unbranched from the base to the outer margin of the wing. Skippers are also characterized by having a stout, moth-like thorax and abdomen. Some species have a hook-like antenna tip. Most Hesperiidae larvae construct shelters in webbed or folded leaves; they feed on a variety of flowering plants.

The Hesperiidae is currently divided into five subfamilies, but the higher relationships are not completely understood and some of these subfamilies are likely paraphyletic. More than 3 400 species are known worldwide, with the greatest diversity occurring in the tropics. Approximately 300 species are known from North America; 31 species are known from AB.

**Eudaminae**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1056 | * | R | *Epargyreus clarus* (Cramer, 1775)<br>Silverspotted Skipper<br>L: McGugan (1958), Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – M Jul | – | b | G |
| 1057 | * | R | *Thorybes pylades* (Scudder, 1870)<br>Northern Cloudywing<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | E Jun – E Jul | m | B | G |
| **Pyrginae** | | | | | | | |
| **Carcharodini** | | | | | | | |
| 1058 | * | R | *Pholisora catullus* (Fabricius, 1793)<br>Common Sootywing<br>L: None C: K. Roever collection | Aug | – | – | G |
| **Erynnini** | | | | | | | |
| 1059 | * | R | *Erynnis icelus* (Scudder and Burgess, 1870)<br>Dreamy Duskywing<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM | M May – L Jun | M | B | G |
| 1059.1 | * | P | *Erynnis pacuvius* (Lintner, 1878)<br>Pacuvius Duskywing | Jun – Jul | M | – | – |
| 1060 | * | R | *Erynnis afranius* (Lintner, 1878)<br>Afranius Duskywing<br>T: Burns (1964)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | May; Aug (2Br) | – | – | G |
| 1061a | * | R | *Erynnis persius* (Scudder, 1863) ssp. *borealis* (Cary, 1906)<br>Persius Duskywing<br>T: McDunnough (1932), Freeman (1943), Burns (1964)<br>L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM | Jun | – | B | – |
| 1061b | * | R | *Erynnis persius* (Scudder, 1863) ssp. *avinoffi* Holland, 1930<br>Persius Duskywing<br>T: McDunnough (1932)<br>L: McDunnough (1932), [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, OLDS, PMAE, ?UASM | Jun – Jul | M | – | – |

1061c * R *Erynnis persius* (Scudder, 1863) ssp. *fredericki* Freeman, 1943 — May — – – G
Persius Duskywing
L: Bird et al. (1995), [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, UASM

**Pyrgini**

1062a * R h *Pyrgus centaureae* (Rambur, [1842]) ssp. *freija* (Warren, 1924) — Jul — – B –
Grizzled Skipper
T: Warren (1935), Evans (1953)
L: Bird et al. (1995), Layberry et al. (1998) C: CNC, NFRC, OLDS, PMAE, UASM

1062b * R h *Pyrgus centaureae* (Rambur, [1842]) ssp. *loki* Evans, 1953 — Jul — M – –
Grizzled Skipper
L: Bird et al. (1995), [Layberry et al. (1998)], Guppy and Shepard (2001) C: NFRC, OLDS, PMAE, UASM

1063 * R *Pyrgus ruralis* (Boisduval, 1852) — May — M – –
Two-banded Checkered Skipper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM

1064 * R *Pyrgus scriptura* (Boisduval, 1852) — Jul — – – G
Small Checkered Skipper
L: Bird et al. (1995), Layberry et al. (1998) C: CNC

1065 * R *Pyrgus communis* (Grote, 1872) — Jun – Aug — – b G
Checkered Skipper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM

**Heteropterinae**

1066 * R *Carterocephalus mandan* (Edwards, 1863) — Jun — – B g
Mandan Skipper
T: Mattoon and Tilden (1998), Guppy et al. (2003), Joyce and Pullin (2004)
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM

1067 * R h *Carterocephalus palaemon* (Pallas, 1771) ssp. *mackenziei* Wyatt, 1965 — Jul — M B –
Arctic Skipper
T: Mattoon and Tilden (1998), Warren (2005)
L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM

**Hesperiinae**

**Megathymini**

1068 * R *Megathymus streckeri* (Skinner, 1895) Jun – – G
Strecker's Giant Skipper
L: Stanford (2005) C: CNC

**Thymelicini**

1069 * S *Ancyloxypha numitor* (Fabricius, 1793) E Jul – – G
Least Skipper
L: Bird et al. (1995), Layberry et al. (1998) C: RSM

1070 R *Oarisma garita* (Reakirt, 1866) Jun m b G
Garita Skipper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM

1071 * R I *Thymelicus lineola* (Ochsenheimer, 1808) Jul m b –
European Skipper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, UASM

**Unnamed tribe**

1072 R *Amblyscirtes oslari* (Skinner, 1899) Jun – – G
Oslar's Roadside Skipper
L: Bird et al. (1995), Layberry et al. (1998) C: CNC, UASM

1073 R *Amblyscirtes vialis* (Edwards, 1862) Jun m B G
Roadside Skipper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM

**Hesperiini**

1074 * R *Hesperia uncas* Edwards, 1863 Jun – b G
Uncas Skipper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

1075 * R *Hesperia manitoba* (Scudder, 1874) Jul M b –
Boreal Skipper
T: Scudder (1874), Lindsey et al. (1931), MacNeill (1964), Forister et al. (2004)
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1076 | * | R | *Hesperia assiniboia* (Lyman, 1892)<br>Plains Skipper<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | Aug | – | b | G |
| 1076.1 | * | P | *Hesperia colorado* (Scudder, 1874) ssp. *harpalus* (Edwards, 1881)<br>Western Branded Skipper | M Jul – M Sep | m | – | G |
| 1076.2 | * | P | *Hesperia leonardus* Harris, 1862 ssp. *pawnee* Dodge, 1874<br>Pawnee Skipper<br>T: Klassen et al. (1989), Scott and Stanford (1981) | Aug | – | – | G |
| 1076.3 | * | P | *Hesperia pahaska* (Leussler, 1938)<br>Pahaska Skipper<br>T: Hooper (1973) | Jun – E Jul | – | – | G |
| 1077 | * | R | *Hesperia nevada* (Scudder, 1874)<br>Nevada Skipper<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, UASM | Jun | m | b | G |
| 1078 | | R | *Polites rhesus* (Edwards, 1878)<br>Rhesus Skipper<br>L: Bird et al. (1995), Layberry et al. (1998) C: UASM | May | – | – | G |
| 1079 | | R | *Polites peckius* (Kirby, 1837)<br>Peck's Skipper<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jul | M | B | G |
| 1080 | | R | *Polites draco* (Edwards, 1871)<br>Draco Skipper<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | Jul | M | b | – |
| 1081 | * | R | *Polites themistocles* (Latreille, [1824])<br>Tawny-edged Skipper<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | Jul | m | b | G |
| 1082 | * | R | *Polites mystic* (Edwards, 1863) ssp. *dacotah* (Edwards, 1871)<br>Long Dash Skipper<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, OLDS, PMAE, UASM | M Jun – L Jul | M | B | G |
| 1083 | * | R | *Poanes hobomok* (Harris, 1862)<br>Hobomok Skipper<br>L: Bird et al. (1995), Layberry et al. (1998) C: PMAE, UASM | Jun | – | b | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1084 | * | R | *Ochlodes sylvanoides* (Boisduval, 1852)<br>Woodland Skipper<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, UASM | Aug | | m | – | G |
| 1085 | * | R | *Anatrytone logan* (Edwards, 1863)<br>Delaware Skipper<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | | – | – | G |
| 1085.1 | * | P | *Notamblyscirtes simius* (Edwards, 1881)<br>Simius Roadside Skipper | Jun | | – | – | G |
| 1086 | * | S | *Euphyes vestris* (Boisduval, 1852)<br>Dun Skipper<br>L: Bird (2000) C: UASM | Jul | | – | b | g |

## Papilionoidea

### 49. Papilionidae – apollos and swallowtails

Members of the Papilionidae are large butterflies. The swallowtails are aptly named, given the presence of prominent tails on their hindwings. The wings do not have androconial scales, and the hindwing has one anal vein. The foreleg tibia has an epiphysis. The larvae are often brightly colored, and they utilize a variety of food plants.

Approximately 600 species of Papilionidae are known worldwide, primarily in the Old World tropics. Thirty-nine species are known from North America; eight of these are known from AB.

**Parnassiinae – apollos**

**Parnassiini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1087 | * | R | *Parnassius clodius* Ménétriés, 1857<br>Clodius Parnassian<br>T: Ferris (1976b)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: OLDS, WLNP | Jul | | M | – | – |
| 1088a | * | R | *Parnassius smintheus* Doubleday, 1847 ssp. *smintheus* Doubleday, 1847<br>Smintheus Parnassian<br>T: Ferris (1976a)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jul | | M | – | g |
| 1088b | * | R | *Parnassius smintheus* Doubleday, 1847 ssp. *xanthus* Ehrmann, 1918<br>Smintheus Parnassian<br>T: Ferris (1976a) | Jul | | M | – | – |

L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, PMAE

**Papilioninae – swallowtails**

**Papilionini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1089a | * | R h | *Papilio machaon* Linnaeus, 1758 ssp. *hudsonianus* Clark, 1932 | Jun | – | B | – |
| | | | Old World Swallowtail | | | | |
| | | | T: Sperling (1987, 1993b), Eitschberger (1993), Pyle (2002) | | | | |
| | | | L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | | | | |
| 1089b | * | R h | *Papilio machaon* Linnaeus, 1758 ssp. *pikei* Sperling, 1987 | Jun | – | b | g |
| | | | Old World Swallowtail | | | | |
| | | | L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, PMAE, UASM | | | | |
| 1089c | * | R h | *Papilio machaon* Linnaeus, 1758 ssp. *dodi* McDunnough, 1939 | Jun | – | – | G |
| | | | Old World Swallowtail | | | | |
| | | | L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, PMAE, UASM | | | | |
| 1090 | * | R | *Papilio zelicaon* Lucas, 1852 | Jun | M | B | G |
| | | | Anise Swallowtail | | | | |
| | | | T: Remington (1968), Fisher (1977), Sperling and Harrison (1994), Wehling (1994), Forister and Shapiro (2003) | | | | |
| | | | L: Fisher (1977), Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | | | | |
| 1091 | * | R | *Papilio canadensis* Rothschild and Jordan, 1906 | Jun | M | B | g |
| | | | Canadian Tiger Swallowtail | | | | |
| | | | T: Miller and Brown (1981), Ferris et al. (1983), Ferris (1989), Zakharov et al. (2004) | | | | |
| | | | L: Skinner (1906), McGugan (1958), Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | | | | |
| 1092 | * | R | *Papilio rutulus* Lucas, 1852 | Jul | M | – | – |
| | | | Western Tiger Swallowtail | | | | |
| | | | L: Schmidt et al. (2003) C: E. M. Pike collection | | | | |
| 1093 | | R | *Papilio eurymedon* Lucas, 1852 | Jul | M | – | – |
| | | | Pale Swallowtail | | | | |

L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: OLDS, WLNP

1094 R *Papilio multicaudata* Kirby, 1884 ssp. *pusillus* Austin and Jul M – G
Emmel, 1998
Two-tailed Swallowtail
L: [Bird et al. (1995)], [Layberry et al. (1998)] C: OLDS, UASM

## 50. Pieridae – whites, marbles, and sulphurs

Members of this family are medium-sized butterflies without tails; most have predominantly white, yellow, or orange wings. The hindwings have two anal veins. Androconial scales are usually present on the dorsal wing surfaces. Forelegs do not have an epiphysis on the tibia. Larvae feed on a variety of plants.

Approximately 1000 species of Pieridae are known worldwide. Seventy-three species are known from North America, 23 of which are reported from AB.

### Coliadinae – sulphurs

1095a * R *Colias philodice* Godart, 1819 ssp. *hagenii* Edwards, [1884] May – Sep – – G
Clouded Sulphur
L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, PMAE, UASM

1095b * R *Colias philodice* Godart, 1819 ssp. *eriphyle* Edwards, 1876 Jun – Jul M – –
Clouded Sulphur
L: [Bird et al. (1995)], [Layberry et al. (1998)], Guppy and Shepard (2001) C: CNC, PMAE, UASM

1095c * R *Colias philodice* Godart, 1819 ssp. *vitabunda* Jun – Jul – B –
Hovanitz, 1943
Clouded Sulphur
L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM

1096 M *Colias eurytheme* Boisduval, 1852 Aug m b G
Alfalfa Butterfly
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM

1097a * R *Colias christina* Edwards, 1863 ssp. *christina* Edwards, 1863 Jul M B G
Christina Sulphur
T: Hovanitz (1943), Masters (1971), Kondla (1986b), Scott et al. (2006)
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

1097b * R *Colias christina* Edwards, 1864 ssp. *sacajawea* Kohler, 2006 Jul m b G
Christina Sulphur
T: Scott et al. (2006)
L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, PMAE, UASM

1098 * R *Colias alexandra* Edwards, 1863 ssp. *altamont* Kondla and Kohler, 2006 May; Aug (2Br) – – G
Alexandra Sulphur
T: Scott et al. (2006)
L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, PMAE, UASM

1099 * R *Colias elis* Strecker, 1885 Jul – M Aug M – –
Elis Sulphur
T: Bean (1895), Curtis and Ferris (1985), Wheat (2001)
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

1100 * R *Colias canadensis* Ferris, 1982 Jun – Jul M B –
Canada Sulphur
T: Ferris (1988)
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM

1101 * R h *Colias nastes* Boisduval, 1832 ssp. *streckeri* Grum-Grschimailo, 1895 Jul M – –
Nastes Sulphur
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

1102 * R *Colias gigantea* Strecker, 1900 ssp. *mayi* Chermock and Chermock, 1940 M Jun – L Jul M B –
Giant Sulphur
T: Ferris (1987)
L: [Bird et al. (1995)], [Layberry et al. (1998)], Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM

1103 * R *Colias pelidne* Boisduval and LeConte, 1829 ssp. *minisni* Bean, 1895 Jul M – –
Bean's Sulphur
T: Ferris (1988)
L: [Bird et al. (1995)], [Layberry et al. (1998)], Guppy and Shepard (2001) C: CNC, PMAE, UASM

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1104 | * | R | *Colias interior* Scudder, 1862<br>Pink-edged Sulphur<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jul | M | B | – |
| 1105 | * | R h | *Colias palaeno* (Linnaeus, 1761) ssp. *chippewa* Edwards, 1870<br>Chippewa Sulphur<br>T: Kurentsov (1970), Maey (1986), Tuzov (1997), Verhulst (2000), Gorbunov (2001), Grieshuber and Worthy (2004)<br>L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: UASM | Jul | – | B | – |
| 1106 | * | S | *Zerene cesonia* (Stoll, 1790)<br>Dog Face<br>L: Bird et al. (1995), Layberry et al. (1998) C: Unknown | Jul – Aug | – | – | G |

**Pierinae**

**Anthocharitini – marbles**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1107 | * | R | *Anthocharis stella* Edwards, 1879<br>Stella Orangetip<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | Jun | M | – | g |
| 1108 | * | R | *Euchloe ausonides* (Lucas, 1852) ssp. *mayi* Chermock and Chermock, 1940<br>Large Marble<br>T: Opler (1968), Warren (2005)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jun | M | B | G |
| 1109 | * | R | *Euchloe olympia* (Edwards, 1871) ssp. *rosa* (Edwards, 1871)<br>Olympia Marble<br>T: Clench and Opler (1983)<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, OLDS, PMAE, UASM | May | – | – | G |
| 1110 | * | R H | *Euchloe creusa* (Doubleday, 1847)<br>Northern Marble<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM | Jun | M | B | – |

**Pierini – whites**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1111 | * S | *Neophasia menapia* (Felder and Felder, 1859) ssp. *tau* (Scudder, 1861)<br>Pine White<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], Guppy and Shepard (2001) C: UASM | Aug | M | – | – |
| 1112a | * R | *Pieris marginalis* (Scudder, 1861) ssp. *tremblayi* Eitschberger, [1984]<br>Margined White<br>T: Eitschberger (1983), Geiger and Shapiro (1992)<br>L: Schmidt et al. (2003) C: G. J. Hilchie collection | Jul | M | – | – |
| 1112b | * R | *Pieris marginalis* (Scudder, 1861) ssp. *reicheli* Eitschberger, [1984]<br>Margined White<br>T: Warren (1968), Eitschberger (1983, 1991), Geiger and Shapiro (1992), Chew and Watt (2006)<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jun; Aug (2Br) | M | – | – |
| 1113 | * R | *Pieris oleracea* Harris, 1829 ssp. *oleracea* Harris, 1829<br>Mustard White<br>T: Warren (1963), Bowden (1972), Eitschberger (1983), Geiger and Shapiro (1992), Chew and Watt (2006)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | May; Aug (2Br) | M | B | – |
| 1114 | R I | *Pieris rapae* Linnaeus, 1758<br>Cabbage Butterfly<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, NFRC, PMAE, UASM | May – Sep | M | B | G |
| 1115 | M | *Pontia protodice* (Boisduval and LeConte, [1830])<br>Checkered White<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Aug | – | b | G |
| 1116a | R | *Pontia occidentalis* (Reakirt, 1866) ssp. *occidentalis* (Reakirt, 1866)<br>Western White<br>T: Chew and Watt (2006)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, NFRC, PMAE, UASM | May – Aug | M | B | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1116b | * | U | *Pontia occidentalis* (Reakirt, 1866) ssp. *nelsoni* (Edwards, 1883)<br>Western White<br>L: Bowman (1951) C: Unknown | Jun – Jul | M | – | – |
| 1117a | * | R | *Pontia sisymbrii* (Boisduval, 1852) ssp. *flavitincta* (Comstock, 1924)<br>California White<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, UASM | May | M | – | – |
| 1117b | * | R | *Pontia sisymbrii* (Boisduval, 1852) ssp. *beringiensis* Guppy and Kondla, 2001<br>California White<br>L: [Bird et al. (1995)], [Layberry et al. (1998)] C: UASM | May | – | B | – |

## 51. Lycaenidae – gossamer wings (coppers, hairstreaks, and blues)

Members of the family Lycaenidae are small butterflies with forelegs that are not functional for walking. Tibial spurs are reduced to one pair or are absent. Structural blue and copper colors are prevalent. Eyes are indented next to the antennae, and the face is much taller than wide. Males often have distinct patches of androconial scales on the dorsal wing surfaces. Most larvae are plant feeders, but a few are lichen feeders; some are carnivorous on ant broods or Homoptera. Several species have complex chemically mediated interactions with ants.

The family Lycaenidae as currently recognized comprises five subfamilies (Ackery et al. 1999). Over 6000 species are known worldwide, with the greatest diversity in the tropics. One hundred and fifty-eight species are known from North America; 39 species are known from AB. The three tribes within Lycaeninae have been treated as separate subfamilies by many authors, e.g., Layberry et al. (1998).

**Lycaeninae – coppers**

**Lycaenini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1118 | * | R h | *Lycaena phlaeas* (Linnaeus, 1761) ssp. *arethusa* Dod, 1907<br>Arethusa Copper<br>T: Dod (1907), Ford (1923), Ferris (1974)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | M Jul – M Aug | M | – | – |
| 1119 | * | R | *Lycaena cupreus* (Edwards, 1870) ssp. *snowi* (Edwards, [1881])<br>Lustrous Copper<br>T: Scott (1981)<br>L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, NFRC, PMAE, UASM | M Jul – M Aug | M | – | – |

1120 R *Lycaena dione* Scudder, 1868 Jul m b G
Dione Copper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, UASM

1121 * S *Lycaena editha* (Mead, 1878) Jul – Aug M – –
Edith's Copper
T: Koçak (1984)
L: Anweiler and Schmidt (2003) C: UASM

1122 * R *Lycaena rubidus* (Behr, 1866) ssp. *sirius* (Edwards, 1871) Jul – – G
Ruddy Copper
T: Johnson and Balogh (1977)
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM

1123 * R *Lycaena heteronea* Boisduval, 1852 ssp. *klotsi* Field, 1936 Jul M – –
Blue Copper
T: Emmel and Pratt (1998)
L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, PMAE, UASM

1124 R *Lycaena hyllus* (Cramer, 1775) Jul m B G
Bronze Copper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM

1125 R *Lycaena dorcas* Kirby, 1837 ssp. *dorcas* Kirby, 1837 L Jul – M Aug M B –
Dorcas Copper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM

1126 * R *Lycaena castro* (Reakirt, 1866) ssp. *florus* (Edwards, [1884]) M Jul – M Aug M – –
Florus Copper
T: Kondla and Guppy (2002), Scott et al. (2006)
L: [Bird et al. (1995)], [Layberry et al. (1998)] C: CNC, PMAE, UASM

1127 R *Lycaena helloides* (Boisduval, 1852) May – Aug m b G
Purplish Copper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

1127.1 * P *Lycaena nivalis* (Boisduval, 1869) Jul – M Aug M – –
Lilac-bordered Copper

1128 * R *Lycaena mariposa* (Reakirt, 1866) Jul M B –
Mariposa Copper
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

**Theclinae – hairstreaks**

**Eumaeini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1129 | * | R | *Satyrium semiluna* Klots, 1930<br>Semiluna Hairstreak<br>T: Kondla (2003), Warren (2005)<br>L: Bird et al. (1995), Layberry et al. (1998) C: CNC, UASM | M Jul – E Aug | M | – | – |
| 1130 | * | R | *Satyrium acadica* (Edwards, 1862)<br>Acadian Hairstreak<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | – | – | G |
| 1131 | * | R | *Satyrium sylvinus* (Boisduval, 1852) ssp. *nootka* Fisher, 1998<br>Sylvan Hairstreak<br>L: Guppy and Shepard (2001), Kondla (2001b) C: CNC, UASM | Jul | M | – | – |
| 1132 | * | R | *Satyrium titus* (Fabricius, 1793) ssp. *immaculosus* (Comstock, 1913)<br>Coral Hairstreak<br>T: Gatrelle (2004)<br>L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, PMAE, UASM | Jul | M | b | G |
| 1133 | * | R | *Satyrium liparops* (LeConte, 1833) ssp. *fletcheri* (Michener and dos Passos, 1942)<br>Striped Hairstreak<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | – | b | G |
| 1133.1 | * | P | *Satyrium saepium* (Boisduval, 1852)<br>Hedgerow Hairstreak | M Jul – Aug | M | – | – |
| 1133.2 | * | P | *Callophrys affinis* (Edwards, 1862)<br>Immaculate Hairstreak | May – M Jun | – | – | G |
| 1134 | * | R | *Callophrys sheridanii* (Edwards, 1877)<br>Sheridan's Elfin<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | M May – E Jun | M | – | – |
| 1134.1 | * | P | *Mitoura gryneus* (Hübner, [1819]) ssp. *siva* (Edwards, 1874)<br>Juniper Hairstreak | E Jun – M Jul | m | – | G |
| 1135 | * | R | *Mitoura spinetorum* (Hewitson, 1867)<br>Thicket Hairstreak<br>T: Johnson (1992), Balint et al. (2003)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC | Jun | M | – | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1136a | * | R | *Incisalia augustinus* (Westwood, 1852) ssp. *augustinus* (Westwood, 1852)<br>Brown Elfin<br>T: dos Passos (1943), Johnson (1992)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | May | M | B | g |
| 1136b | * | R | *Incisalia augustinus* (Westwood, 1852) ssp. *iroides* (Boisduval, 1852)<br>Western Elfin<br>L: Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, PMAE, UASM | May | M | – | – |
| 1137 | | R | *Incisalia mossii* (Edwards, 1881) ssp. *schryveri* Cross, 1937<br>Moss' Elfin<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: UASM | M May – E Jun | M | – | – |
| 1138 | * | R | *Incisalia polios* Cook and Watson, 1907 ssp. *obscurus* Ferris and Fisher, 1973<br>Hoary Elfin<br>L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, NFRC, PMAE, UASM | May | M | B | – |
| 1139 | * | R | *Incisalia niphon* (Hübner, [1819]) ssp. *clarki* Freeman, 1938<br>Eastern Pine Elfin<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM | L May – M Jun | – | B | – |
| 1140 | * | R | *Incisalia eryphon* (Boisduval, 1852)<br>Western Pine Elfin<br>T: Johnson (1992)<br>L: McGugan (1958), Ives and Wong (1988), Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM | M May – M Jun | M | B | – |
| 1141 | * | R | *Strymon melinus* Hübner, 1818<br>Grey Hairstreak<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, UASM | L May; L Jul – E Aug (2Br) | – | b | G |

**Polyommatinae – blues**

**Polyommatini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1142 | * | R | *Cupido amyntula* (Boisduval, 1852) ssp. *albrighti* (Clench, 1944)<br>Western Tailed Blue<br>T: Kudrna (1986), Warren (2005) | E Jun – M Jul | M | B | G |

L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1143 | * | R | *Celastrina lucia* (Kirby, 1837)<br>Boreal Azure<br>T: Pavulaan and Wright (2005)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | May | M | B | g |
| 1144 | * | R | *Celastrina echo* (Edwards, 1864) ssp. *nigrescens* (Fletcher, 1903)<br>Western Azure<br>L: [Bird et al. (1995)], Layberry et al. (1998) C: CNC, PMAE, UASM | L May – M Jun | M | – | – |
| 1145 | * | R | *Celastrina neglecta* (Edwards, 1862) ssp. *argentata* (Fletcher, 1903)<br>Summer Azure<br>L: None C: G. J. Hilchie collection, NGKC | Jul | – | b | g |
| 1146 | * | R | *Euphilotes ancilla* (Barnes and McDunnough, 1918)<br>Ancilla Blue<br>T: Pratt (1994), Pratt and Emmel (1998), Warren (2005)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: UASM | Jun | – | – | G |
| 1147 | * | R | *Glaucopsyche piasus* (Boisduval, 1852) ssp. *daunia* (Edwards, 1871)<br>Arrowhead Blue<br>L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, PMAE, UASM | Jun | m | b | G |
| 1148 | * | R | *Glaucopsyche lygdamus* (Doubleday, 1841) ssp. *afra* (Edwards, [1884])<br>Silvery Blue<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM | M May – M Jul | M | B | G |
| 1149a | * | R | *Plebejus idas* (Linnaeus, 1761) ssp. *scudderii* (Edwards, 1861)<br>Scudder's Blue<br>T: Balint and Johnson (1997), Nice et al. (2002, 2005), Scott et al. (2006)<br>L: [Bird et al. (1995)], Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | M | B | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1149b | * | R | *Plebejus idas* (Linnaeus, 1761) ssp. *atrapraetextus* Field, 1939<br>Dark-edged Blue<br>T: Balint and Johnson (1997), Scott et al. (2006)<br>L: Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | M | – | – |
| 1150 | * | R | *Plebejus melissa* (Edwards, 1873)<br>Melissa Blue<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | May; Jul; Aug (3Br?) | m | b | G |
| 1151 | * | R | *Aricia saepiolus* (Boisduval, 1852) ssp. *amica* (Edwards, 1863)<br>Greenish Blue<br>T: Balint and Johnson (1997), Scott et al. (2006)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | M | B | G |
| 1152 | * | R | *Aricia icarioides* (Boisduval, 1852) ssp. *pembina* (Edwards, 1862)<br>Icarioides Blue<br>L: [Bird et al. (1995)], Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM | M Jun – M Jul | M | b | G |
| 1153 | | R | *Aricia shasta* (Edwards, 1862) ssp. *minnehaha* (Scudder, 1874)<br>Shasta Blue<br>L: [Bird et al. (1995)], Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | M Jun – M Jul | – | – | G |
| 1154 | * | R | *Aricia lupini* (Boisduval, 1869)<br>Lupine Blue<br>T: Scott (1998b), Opler (2003), Warren (2005)<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, PMAE, UASM | M Jun – M Jul | M | – | G |
| 1155 | * | R H | *Albulina optilete* (Knoch, 1781)<br>Cranberry Blue<br>T: Balint and Johnson (1997)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: NFRC, PMAE, UASM | Jul | – | B | – |
| 1156a | * | R | *Agriades glandon* (de Prunner, 1798) ssp. *lacustris* (Freeman, 1939)<br>Boreal Blue<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], Guppy and Shepard (2001) C: UASM | Jun | – | B | – |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1156b | * | R | *Agriades glandon* (de Prunner, 1798) ssp. *megalo* (McDunnough, 1927)<br>Mountain Blue<br>T: Ferris (1989), Acorn (1993), Emmel and Emmel (1998), Schmidt et al. (2003)<br>L: [Bird et al. (1995)], Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | | M | – | – |
| 1156c | * | R | *Agriades glandon* (de Prunner, 1798) ssp. *rustica* (Edwards, 1865)<br>Prairie Blue<br>L: [Bird et al. (1995)], Layberry et al. (1998) C: CNC, OLDS, PMAE, UASM | Jun | | m | b | G |

## 52. Nymphalidae – brush-footed butterflies

The brush-footed butterfly family consists of small to large butterflies with wide variation in appearance and wing structure. The family is primarily defined by the hairy and reduced forelegs, which are not functional for walking. The eyes are not indented next to the antennae, and the face is as wide as it is tall between the eyes. Many species are quite similar externally, particularly the fritillaries and the checkerspots; the latter are particularly variable within species, making species and subspecies limits difficult to determine. Larvae feed on a variety of plants; some feed gregariously on webs.

The subfamilies Satyrinae and Danainae have often been treated as distinct families but are considered here to be nymphalid subfamilies, sensu Ackery et al. 1999. Approximately 6000 species of Nymphalidae are known worldwide. Two hundred and sixteen species are known from North America; 74 species are reported from AB.

**Danainae – milkweed butterflies**

**Danaini**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1157 | * | M | H | *Danaus plexippus* (Linnaeus, 1758) ssp. *plexippus* (Linnaeus, 1758)<br>Monarch<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jul | | – | – | G |

**Limenitidinae – admirals**

**Limenitidini**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1158 | * | R | | *Limenitis arthemis* (Drury, 1773) ssp. *rubrofasciata* (Barnes and McDunnough, 1916)<br>White Admiral<br>L: McGugan (1958), Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: NFRC, OLDS, PMAE, UASM | Jul | | M | B | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1159 | * | R | *Limenitis weidemeyerii* Edwards, 1861 ssp. *oberfoelli* Brown, 1960<br>Weidemeyer's Admiral<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: NGKC, E. M. Pike collection | L Jun – M Jul | – | – | G |
| 1160 | * | R | *Limenitis lorquini* Boisduval, 1852 ssp. *itelkae* Guppy 2001<br>Lorquin's Admiral<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: OLDS, PMAE, UASM | Jul | M | – | – |
| 1161 | * | R | *Limenitis archippus* (Cramer, 1775)<br>Viceroy<br>L: McGugan (1958), Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: NFRC, OLDS, PMAE, UASM | Jul | – | B | G |

**Heliconiinae**

**Argynnini – fritillaries**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1162 | | M | *Euptoieta claudia* (Cramer, 1775)<br>Variegated Fritillary<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | Jul – Aug | m | b | G |
| 1163 | * | R H | *Boloria alaskensis* (Holland, 1900)<br>Alaskan Fritillary<br>T: Crosson du Cormier (1977), Dubatolov (1992), Kosterin (2000), Tuzov (2000), Gorbunov (2001)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: UASM | Jul – E aug | M | – | – |
| 1164a | * | R h | *Boloria eunomia* (Esper, 1800) ssp. *dawsoni* (Barnes and McDunnough, 1916)<br>Bog Fritillary<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | Jun | M | B | – |
| 1164b | * | R h | *Boloria eunomia* (Esper, 1800) ssp. *nichollae* (Barnes and Benjamin, 1926)<br>Bog Fritillary<br>T: Ferris and Groothuis (1970)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM | Jul | M | – | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1165 | * | R | *Boloria myrina* (Cramer, 1777)<br>Silver Bordered Fritillary<br>T: McDunnough (1932), Clark (1941), Kohler (1977), Oliver (1977)<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM | Jun – Aug | M | B | G |
| 1166 | * | R | *Boloria bellona* (Fabricius, 1775) ssp. *jenistai* Stallings and Turner, 1947<br>Meadow Fritillary<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | M May; Aug (2Br) | M | B | G |
| 1167 | * | R h | *Boloria frigga* (Thunberg, 1791) ssp. *saga* (Staudinger, 1861)<br>Frigga Fritillary<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM | Jun | M | B | – |
| 1168 | * | R h | *Boloria improba* (Butler, 1877) ssp. *nunatak* Scott, 1998<br>Dingy Arctic Fritillary<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, UASM | Jul | M | – | – |
| 1169 | * | R | *Boloria epithore* (Edwards, 1864) ssp. *uslui* Kocak, 1984<br>Western Meadow Fritillary<br>T: Perkins and Meyer (1973)<br>L: Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, PMAE, UASM | Jul | M | – | – |
| 1170 | * | R | *Boloria alberta* (Edwards, 1890)<br>Alberta Fritillary<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | M | – | – |
| 1171 | * | R | *Boloria astarte* (Doubleday, [1847])<br>Astarte Fritillary<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | M | – | – |
| 1172 | * | R H | *Boloria freija* (Thunberg, 1791)<br>Freija Fritillary<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | May | M | B | – |

1173 * R *Boloria chariclea* (Schneider, 1794) ssp. *grandis* (Barnes and McDunnough, 1916) Jul – M Aug M B g
Purple Fritillary
T: Kurentsov (1970), Higgins (1975), Tuzov (1997), Shepard (1998), Gorbunov (2001), Simonsen (2005)
L: [Bird et al. (1995)], Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

1174 * R *Speyeria cybele* (Fabricius, 1775) ssp. *pseudocarpenteri* (Chermock and Chermock, 1940) Jul – B G
Great Spangled Fritillary
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM

1175 * R *Speyeria leto* (Behr, 1862) Jul M b G
Leto Fritillary
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM

1176a * R *Speyeria aphrodite* (Fabricius, 1787) ssp. *ethne* (Hemming, 1933) M Jul – M Aug – – G
Aphrodite Fritillary
L: None C: CNC

1176b R *Speyeria aphrodite* (Fabricius, 1787) ssp. *manitoba* (Chermock and Chermock, 1940) M Jul – M Aug m B G
Aphrodite Fritillary
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

1177 R *Speyeria edwardsii* (Reakirt, 1866) Jul M b G
Edward's Fritillary
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM

1177.1 * P *Speyeria coronis* (Behr, 1864) ssp. *snyderi* (Skinner, 1897) Jun – – G
Coronis Fritillary

1178 * R *Speyeria zerene* (Boisduval, 1852) ssp. *garretti* (Gunder, 1932) Jul M – G
Zerene Fritillary
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM

1179 * R *Speyeria callippe* (Boisduval, 1852) ssp. *calgariana* (McDunnough, 1924) M Jun – M Jul m b G
Callippe Fritillary
T: Howe (1975)

L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM

1180 * R *Speyeria egleis* (Behr, 1862) Jul – – G
Egleis Fritillary
L: Guppy and Shepard (2001), Schmidt et al. (2003) C: NGKC

1181 * R *Speyeria atlantis* (Edwards, 1862) ssp. *hollandi* (Chermock and Chermock, 1940) L Jun – L Jul M B –
Atlantis Fritillary
T: Howe (1975), Klassen et al. (1989), Kondla (1992), Scott et al. (1998)
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

1182a * R *Speyeria hesperis* (Edwards, 1864) ssp. *brico* Scott, Kondla and Spomer, 1998 Jul M – –
Northwestern Fritillary
T: Scott et al. (1998)
L: [Bird et al. (1995)], [Layberry et al. (1998)] C: CNC, ?UASM

1182b * R *Speyeria hesperis* (Edwards, 1864) ssp. *beani* (Barnes and Benjamin, 1926) Jul M – –
Northwestern Fritillary
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM

1182c * R *Speyeria hesperis* (Edwards, 1864) ssp. *dennisi* dos Passos and Grey, 1945 L Jun – L Jul – B G
Northwestern Fritillary
T: Scott et al. (1998)
L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, PMAE, UASM

1183 * R *Speyeria hydaspe* (Boisduval, 1869) ssp. *rhodope* (Edwards, 1874) Jul M b –
Hydaspe Fritillary
T: Kondla (2001a)
L: [Bird et al. (1995)], Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM

1184a * R *Speyeria mormonia* (Boisduval, 1869) ssp. *opis* (Edwards, 1874) Jul – M Aug M – –
Mormon Fritillary
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1184b | | R | *Speyeria mormonia* (Boisduval, 1869) ssp. *eurynome* (Edwards, 1872)<br>Mormon Fritillary<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | Jul – M Aug | M | b | G |

**Nymphalinae**

**Nymphalini – angle-wings**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1185 | * | S | *Vanessa virginiensis* (Drury, 1773)<br>American Painted Lady<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, UASM | Jun – Sep | – | b | G |
| 1186 | * | M | *Vanessa cardui* (Linnaeus, 1758)<br>Painted Lady<br>L: McGugan (1958), Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | May – Sep | m | b | G |
| 1187 | * | M | *Vanessa annabella* (Field, 1971)<br>West Coast Lady<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: UASM | Jun – M Oct | m | – | g |
| 1188 | | R H | *Vanessa atalanta* (Linnaeus, 1758) ssp. *rubria* (Fruhstorfer, 1909)<br>Red Admiral<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: OLDS, PMAE, UASM | Apr – May; Jul – Aug (H) | M | B | G |
| 1189 | * | R | *Aglais milberti* (Godart, 1819)<br>Milbert's Tortoise Shell<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | M Apr – M May; M Jul – M Sep (H; 2Br) | M | B | G |
| 1190 | * | R | *Nymphalis j-album* (Boisduval and LeConte, [1835])<br>Compton Tortoise Shell<br>T: Gillham (1956), Kudrna and Belicek (2005)<br>L: McGugan (1958), Bird et al. (1995), Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM | M Apr – M May; Aug – M Sep (H) | M | B | g |
| 1191 | * | R | *Nymphalis californica* (Boisduval, 1852)<br>California Tortoise Shell<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul – Sep | M | b | g |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1192 | * | R h | *Nymphalis antiopa* (Linnaeus, 1758) ssp. *hyperborea* (Seitz, 1913)<br>Mourning Cloak<br>L: [McGugan (1958)], [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM | M Apr – M May; Aug – M Sep (H) | M | B | G |
| 1193 | * | S | *Polygonia interrogationis* (Fabricius, 1798)<br>Question Mark<br>L: Bird (1979), Bird et al. (1995), Layberry et al. (1998) C: OLDS | M May – Aug (2Br) | – | b | G |
| 1194a | * | R | *Polygonia satyrus* (Edwards, 1869) ssp. *satyrus* (Edwards, 1869)<br>Satyr Anglewing<br>T: Scott et al. (2006)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | M Apr – M May; Aug – M Sep (H; 2Br) | M | – | g |
| 1194b | * | R | *Polygonia satyrus* (Edwards, 1869) ssp. *transcanada* Scott and Kondla, 2006<br>Satyr Anglewing<br>T: Scott et al. (2006)<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, PMAE, UASM | Apr – Oct (H; 2Br) | – | B | – |
| 1195 | | R | *Polygonia progne* (Cramer, 1775)<br>Grey Comma<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | M Apr – M May; M Jul – M Sep (H) | m | B | G |
| 1196 | * | R | *Polygonia oreas* (Edwards, 1869) ssp. *threatfuli* Guppy and Shepard, 2001<br>Oreas Anglewing<br>T: Scott et al. (2006)<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], Guppy and Shepard (2001) C: UASM | M Apr – M May; Aug – M Sep (H) | M | – | – |
| 1197 | * | R | *Polygonia gracilis* (Grote and Robinson, 1867)<br>Hoary Comma<br>T: Scott (1984)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | M Apr – M May; Aug – M Sep (H) | M | B | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1198a | * | R | *Polygonia faunus* (Edwards, 1862) ssp. *faunus* (Edwards, 1862)<br>Green Comma<br>L: McGugan (1958), [Bird et al. (1995)], Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM | M Apr – M May; Aug – M Sep (H) | M | B | g |
| 1198b | * | R | *Polygonia faunus* (Edwards, 1862) ssp. *arcticus* Leussler, 1935<br>Green Comma<br>T: Leussler (1935), dos Passos (1977), Scott (1984)<br>L: Bird et al. (1995), [Layberry et al. (1998)] C: CNC, OLDS, PMAE, UASM | M Apr – M May; Aug – M Sep (H) | – | B | – |
| 1198c | * | R | *Polygonia faunus* (Edwards, 1862) ssp. *cenveray* Scott and Kondla, 2006<br>Green Comma<br>T: Scott et al. (2006)<br>L: [Anderson (1959)], [Bird et al. (1995)], [Layberry et al. (1998)] C: CNC, NFRC, PMAE, UASM | M Apr – M May; Aug – M Sep (H) | M | – | – |

**Melitaeini – checkerspots**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1199 | * | R | *Euphydryas gillettii* (Barnes, 1897)<br>Gillett's Checkerspot<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM | L Jun – M Jul | M | b | – |
| 1200a | * | R | *Euphydryas editha* (Boisduval, 1852) ssp. *hutchinsi* McDunnough, 1928<br>Edith's Checkerspot<br>L: Bird et al. (1995), Layberry et al. (1998) C: NGKC | Jun | – | – | G |
| 1200b | * | R | *Euphydryas editha* (Boisduval, 1852) ssp. *beani* (Skinner, 1897)<br>Edith's Checkerspot<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | M | – | – |
| 1201 | * | R | *Euphydryas anicia* (Doubleday, [1847]) ssp. *anicia* (Doubleday, [1847])<br>Anicia Checkerspot<br>L: Bird et al. (1995), [Layberry et al. (1998)], Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jun – Jul | M | b | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1202 | * | R | *Euphydryas bernadetta* Leussler, 1920<br>Bernadetta Checkerspot<br>T: Schmidt et al. (2003), Scott et al. (2006)<br>L: Schmidt et al. (2003) C: CNC, UASM | Jun | – | – | G |
| 1203 | * | R | *Chlosyne gorgone* (Hübner, [1810]) ssp. *carlota* (Reakirt, 1866)<br>Gorgone Checkerspot<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, PMAE, UASM | Jun | – | b | G |
| 1204 | * | R | *Chlosyne acastus* (Edwards, 1874)<br>Acastus Checkerspot<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | L May – M Jun | – | – | G |
| 1205 | * | R | *Chlosyne palla* (Boisduval, 1852)<br>Northern Checkerspot<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jul | M | b | – |
| 1206 | * | R | *Chlosyne damoetas* (Skinner, 1902) ssp. *altalus* Scott, 1998<br>Rockslide Checkerspot<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, PMAE, UASM | Jul | M | – | – |
| 1206.1 | * | P | *Phyciodes pallida* (Edwards, 1864)<br>Pale Crescent | Jun | M | – | – |
| 1207 | * | R | *Phyciodes tharos* (Drury, [1773]) ssp. *orantain* Scott, 1998<br>Prairie Pearl Crescent<br>T: Scott (1998a, 2006)<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, OLDS, PMAE, UASM | Jun – Aug (2Br) | – | b | G |
| 1208 | * | R | *Phyciodes cocyta* (Cramer, 1777) ssp. *selenis* (Kirby, 1837)<br>Northern Pearl Crescent<br>T: Scott (2006)<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, PMAE, UASM | Jul | M | B | G |
| 1209 | * | R | *Phyciodes batesii* (Reakirt, [1866]) ssp. *saskatchewan* Scott, 2006<br>Tawny Crescent<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, PMAE, UASM | Jun – E Jul | m | B | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1210 | * | R | *Phyciodes pulchella* (Boisduval, 1852) ssp. *owimba* Scott, 1998<br>Field Crescent<br>L: [Bird et al. (1995)], [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM | Jul – M Aug | M | b | – |

**Satyrinae – satyrs and wood nymphs**

**Elymniini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1211 | * | R | *Lethe anthedon* (Clark, 1936) ssp. *borealis* Clark, 1936<br>Northern Pearly Eye<br>T: Masters (1971), Grkovich and Pavulaan (2003), Schmidt et al. (2003)<br>L: Pinel (1990), Bird et al. (1995), [Layberry et al. (1998)] C: PMAE, UASM | E Jul | – | B | – |
| 1212 | * | R | *Lethe eurydice* (Linnaeus, 1763)<br>Eyed Brown<br>L: Cardé et al. (1970), Bird et al. (1995), Layberry et al. (1998) C: PMAE | L Jun – E Jul | – | B | – |

**Satyrini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1213a | * | R | *Coenonympha inornata* Edwards, 1861 ssp. *benjamini* McDunnough, 1928<br>Common Ringlet<br>L: [Bird et al. (1995)], Layberry et al. (1998), [Guppy and Shepard (2001)] C: CNC, NFRC, OLDS, PMAE, UASM | Jun | m | b | G |
| 1213b | * | R | *Coenonympha inornata* Edwards, 1861 ssp. *mackenziei* Davenport, 1936<br>Common Ringlet<br>L: [Bird et al. (1995)], Layberry et al. (1998), Schmidt et al. (2003) C: NFRC, PMAE | Jun | – | B | – |
| 1213.1 | * | P | *Megisto cymela* (Cramer, 1777)<br>Little Wood-satyr | E Jun – L Jul | – | b | g |
| 1214 | * | R | *Cercyonis pegala* (Fabricius, 1775) ssp. *ino* Hall, 1924<br>Common Wood Nymph<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jul | m | B | G |
| 1215 | * | R | *Cercyonis oetus* (Boisduval, 1869)<br>Dark Wood Nymph<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | Jul | M | b | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1215.1 | * | P | *Erebia rossii* (Curtis, 1835)<br>Ross's Alpine | Jun – Jul | M | b | – |
| 1216 | * | R | *Erebia mancinus* Doubleday, [1849]<br>Boreal Alpine<br>T: Warren (1936)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jun | M | B | – |
| 1217 | * | R | *Erebia magdalena* Strecker, 1880 ssp. *hilchie* Kemal and Koçak, 2007<br>Magdalena Alpine<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | M | – | – |
| 1218a | * | R | *Erebia epipsodea* Butler, 1868 ssp. *epipsodea* Butler, 1868<br>Common Alpine<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | Jul | M | – | – |
| 1218b | * | R | *Erebia epipsodea* Butler, 1868 ssp. *sineocellata* Skinner, 1889<br>Common Alpine<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jun | – | B | G |
| 1219 | * | R H | *Erebia discoidalis* (Kirby, 1837) ssp. *discoidalis* (Kirby, 1837)<br>Red-disked Alpine<br>L: [Bird et al. (1995)], Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | May | M | B | g |
| 1220 | * | U | *Erebia pawloskii* Ménetriés, 1859<br>Mountain Alpine<br>L: [Ehrlich (1958)], [Bird et al. (1995)] C: AMNH? | E Jul – M Aug | M | – | – |
| 1221 | | R | *Neominois ridingsii* (Edwards, 1865) ssp. *minimus* Austin, 1986<br>Ridings' Satyr<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM | M Jun – E Jul | – | – | G |
| 1222 | * | R H | *Oeneis polixenes* (Fabricius, 1775)<br>Polixenes Arctic<br>T: Troubridge and Parshall (1988)<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM | Jul | M | – | – |

1223a * R *Oeneis balderi* (Geyer, 1837) ssp. *ridingiana* Chermock and Chermock, 1940 Jun M B –
American Arctic
T: McDunnough (1929a), Gross (1970), Kurentsov (1970), Murayama (1973), Lukhtanov (1987), Korshunov and Nikolaev (2002)
L: Bird et al. (1995), [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, PMAE, UASM

1223b * R *Oeneis balderi* (Geyer, 1837) ssp. *chermocki* Wyatt, 1965 Jun M – –
American Arctic
L: Bird et al. (1995), [Layberry et al. (1998)], [Guppy and Shepard (2001)] C: CNC, OLDS, PMAE, UASM

1224 * R *Oeneis melissa* (Fabricius, 1775) ssp. *beanii* Elwes, 1893 Jul M – –
Melissa Arctic
T: dos Passos (1958)
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM

1225 * R *Oeneis bore* (Esper, 1789) ssp. *edwardsi* dos Passos, 1949 Jul M – –
White-veined Arctic
T: dos Passos (1949), Kurentsov (1970), Tuzov (1997), Ferris (1986)
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, PMAE, UASM

1226 * R *Oeneis chryxus* (Doubleday and Hewitson, [1849]) Jul M – –
Chryxus Arctic
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM

1227a * R *Oeneis calais* (Scudder, 1865) ssp. *caryi* Dyar, 1904 Jun – B –
Cary's Arctic
T: McDunnough (1934), Scott et al. (2006)
L: [Bird et al. (1995)], [Layberry et al. (1998)] C: UASM

1227b * R *Oeneis calais* (Scudder, 1865) ssp. *altacordillera* Scott, 2006 Jul M – –
High Mountain Arctic
T: Scott et al. (2006)
L: [Bird et al. (1995)], [Layberry et al. (1998)] C: PMNH

1228 * R *Oeneis alberta* Elwes and Edwards, 1893 ssp. *alberta* Elwes and Edwards, 1893 L Apr – M May – b G
Alberta Arctic
L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, OLDS, PMAE, UASM

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1229 | | R | *Oeneis macounii* (Edwards, 1885)<br>Macoun's Arctic<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | Jun | M | B | – |
| 1230 | * | R | *Oeneis uhleri* (Reakirt, 1866) ssp. *varuna* (Edwards, 1882)<br>Uhler's Arctic<br>L: Bird et al. (1995), Layberry et al. (1998), Guppy and Shepard (2001) C: CNC, NFRC, OLDS, PMAE, UASM | L May – M Jun | m | b | G |

# Section 3. Macromoths

## Drepanoidea

### *53. Drepanidae – lutestrings and hooktips*

Medium-sized (30–45 mm wingspan) nocturnal moths. The group contains two superficially dissimilar subfamilies, united by the presence of a tympanum between abdominal tergite 1 and sternum 2. The Thyatirinae was long considered to be a separate family, are more similar in overall form to noctuids as adults and larvae. Members of the subfamily Drepaninae superficially resemble geometrids, being broad winged with slender bodies and resting with the wings held to the side of the body. Some species, including members of *Drepana*, have distinct, falcate forewing tips; hence the common name "hooktips." Larvae of both groups feed primarily on the leaves of deciduous trees and shrubs. Rich, mixedwood boreal forest is home to most of the species listed here.

There are approximately 650 species of drepanids worldwide (Minet and Scoble 1999), with the center of diversity in tropical Asia. Twenty-one species occur in North America; nine of these have been recorded in AB. There are no recent taxonomic treatments encompassing the North American drepanid fauna, with Forbes (1923) still being the most complete work. Clarke and Benjamin (1938) reviewed the genus *Ceranemota*. Werny (1966) examined the tribal classification of the Thyatirinae.

**Thyatirinae – lutestrings**

**Habrosynini**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1231 | R | *Habrosyne scripta* (Gosse, 1840)<br>T: Forbes (1923)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, OLDS, PMAE, UASM | M Jun – M Jul | m | B | g |
| 1232 | R | *Pseudothyatira cymatophoroides* (Guenée, 1852)<br>T: Forbes (1923)<br>L: Bowman (1951), Prentice (1963), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – L Jul | m | B | g |

**Macrothyatirini**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1233 | R | *Euthyatira pudens* (Guenée, 1852)<br>T: Forbes (1923)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Apr – L May | m | B | g |

**Ceranemotini**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1234 | R | *Ceranemota albertae* Clarke, 1938<br>T: Clarke and Benjamin (1938)<br>L: Bowman (1951) C: CNC, OLDS, UASM | L Aug – M Sep | M | b | G |
| 1235 | * R | *Ceranemota fasciata* (Barnes and McDunnough, 1910)<br>T: Clarke and Benjamin (1938)<br>L: None C: UASM | L Aug – M Sep | M | – | – |

**Drepaninae – hooktip moths**

**Drepanini**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1236 | R | *Drepana arcuata* Walker, 1855<br>T: Forbes (1923)<br>L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jun – M Jul | m | B | – |
| 1237 | R | *Drepana bilineata* (Packard, 1864)<br>T: Forbes (1923)<br>L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | m | B | g |
| 1238 | R | *Eudeilinia herminiata* (Guenée, [1858])<br>T: Forbes (1923)<br>L: Bowman (1951), Ives and Wong (1988) C: CNC, NFRC, UASM | M Jun – M Jul | – | B | g |

**Oretini**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1239 | R | *Oreta rosea* (Walker, 1855)<br>T: Forbes (1923)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E – L Jul | – | B | g |

## Geometroidea

### *54. Uraniidae – swallowtail moths*

Mostly small (15–20 mm wingspan) moths reminiscent of geometrids. Most North American species have drably colored wings, but several tropical species, including one stray in the southern United States, are very large, brightly colored species that are reminiscent of papilionids. The family is defined by characters of the abdominal tympanum and wing venation. Some species, including the AB species, have notched hindwings. These moths exhibit a unique resting behaviour: the forewings are outstretched and appressed to the substrate, while the hindwings are held partially folded along the side of the abdomen. Larvae are often gregarious in a web, and they feed on a variety of plants.

Approximately 700 species of Uraniidae are known worldwide, primarily from the tropics. Nine species are known in North America; one of these occurs in AB. North

American species have not been revised recently; the sole AB species was illustrated by Covell (1984).

**Epipleminae**

1240 R *Callizzia amorata* Packard, 1876 L Jun – M Jul m B g
T: Covell (1984)
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

## *55. Geometridae – inchworm moths; loopers*

Primarily medium-sized (but ranging from 10 to 60 mm wingspan) moths with relatively slender bodies and broad, butterfly-like wings. The group is united by the unique structure of the abdominal tympanal organs and by the form of the larvae, which have only two pairs of abdominal prolegs, with the exception of a few species that lack this character. The moths in this family are commonly called loopers or inchworms for their larval crawling habit. Although some adults are brightly or boldly colored, most exhibit subtle patterns with browns and grays, often cryptically colored to match bark or leaves. Many geometrids rest with the fore- and hindwing to the side and appressed to the resting surface, exhibiting a continuation of pattern and color between fore- and hindwings. The larvae of most species feed on trees and shrubs, both deciduous and coniferous. Given their diversity, abundance, degree of host specialization, and broad distribution, members of the Geometridae represent a significant component of most forest insect communities.

The family Geometridae is one of the three largest lepidopteran families, encompassing about 21 000 described species, primarily in the tropics. About 1400 species of Geometridae occur in North America, 293 of which are reported from AB. Relationships at the subfamily level have been reassessed recently; Young (2006) showed that the subfamily Larentiinae is almost certainly basal within the Geometridae and that Ennominae as currently defined is not monophyletic (see also Abraham et al. 2001). The subfamily Sterrhinae is placed as the second-most basal group. The order in which the Geometridae subfamilies are presented here follows these new findings.

### *55.1. Larentiinae – carpet moths*

Medium-sized moths (approximately 15–35 mm wingspan) with complex patterns of transverse bands. They can be separated from other geometrids by wing venation: on the hindwing, the Sc + $R_1$ veins are fused with the Rs vein for more than one-quarter the length of the discal cell. No other easily observable characters define the group. Larvae of most species feed on the foliage of trees; a few species of *Eupithecia* in Hawaii are carnivorous on aphids and spiders. The Larentiinae includes a few forest pest species such as the winter moths (*Operophtera* spp.).

Approximately 5700 species of Larentiinae are known worldwide, primarily from temperate regions. Approximately 470 species occur in North America; 137 are known from AB. This subfamily is in need of taxonomic work, and many specimens in collections have not been adequately identified because of the difficulty in making species

determinations. Some groups are reasonably well known, including *Anticlea* (Rindge 1967), some *Dysstroma* (McDunnough 1946a), *Entephria* (Troubridge 1997), *Eubaphe* (Fletcher 1954), Canadian *Eupithecia* (Bolte 1990), some *Hydriomena* (McDunnough 1954), *Operophtera* (Troubridge and Fitzpatrick 1993), *Plemyria* (Choi 1998), and *Rheumaptera* (Skou 1986). McGuffin (1958b) treated the known larvae.

**Cidariini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1241 | | R H | *Dysstroma citrata* (Linnaeus, 1761)<br>T: McDunnough (1946a), Skou (1986)<br>L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, UASM | E – L Aug | m | B | g |
| 1242 | * | R | *Dysstroma suspectata* (Möschler, 1874)<br>T: McDunnough (1946a)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | Jul – E Aug | m | B | – |
| 1243 | * | R H | *Dysstroma infuscata* (Tengström, 1869)<br>T: Heydemann (1929)<br>L: None C: CNC, UASM | M Jul | M | b | – |
| 1244 | * | R H | *Dysstroma truncata* (Hufnagel, 1767)<br>T: McDunnough (1946a), Skou (1986)<br>L: McDunnough (1946a), Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – L Jul | m | B | g |
| 1245 | * | R | *Dysstroma walkerata* (Pearsall, 1909)<br>T: McDunnough (1946a)<br>L: McDunnough (1946a), Bowman (1951), McGuffin (1958b), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jul – L Aug | m | B | – |
| 1246 | * | R H | *Dysstroma pseudimmanata* (Heydemann, 1929)<br>T: Heydemann (1929)<br>L: None C: CNC, NFRC, UASM | M Jul – L Aug | M | – | – |
| 1247 | | R | *Dysstroma hersiliata* (Guenée, [1858])<br>T: Covell (1984)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – L Aug | m | B | – |
| 1248 | * | R | *Dysstroma rutlandia* (McDunnough, 1943)<br>L: Bowman (1951) C: CNC | Jul | – | b | g |
| 1249 | | R | *Dysstroma formosa* (Hulst, 1896)<br>L: Bowman (1951), McGuffin (1958b), Pohl et al. (2004b) C: CNC | L Jun – L Jul | m | B | g |
| 1250 | | R | *Dysstroma brunneata* (Packard, 1867)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M Jul – E Aug | m | B | – |
| 1251 | * | R | *Eulithis gracilineata* (Guenée, [1858]) | E Aug | – | b | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: [Bowman (1951)], [McGuffin (1958b)] C: CNC, UASM | | | | | |
| 1252 | | R | *Eulithis propulsata* (Walker, 1862)<br>L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – M Aug | M | b | g |
| 1253 | | R H | *Eulithis testata* (Linnaeus, 1761)<br>T: Skou (1986)<br>L: Bowman (1951), Prentice (1963) C: CNC, NFRC, OLDS, PMAE, UASM | L Jul – E Aug | m | B | – |
| 1254 | * | R | *Eulithis destinata* (Möschler, 1860)<br>T: McDunnough (1943c)<br>L: McDunnough (1943c), Bowman (1951), McGuffin (1958b), Prentice (1963) C: CNC, NFRC, OLDS, UASM | M Jul – M Aug | M | – | – |
| 1255 | * | R | *Eulithis flavibrunneata* (McDunnough, 1943)<br>T: McDunnough (1943c)<br>L: McDunnough (1943c), Bowman (1951), McGuffin (1958b), Prentice (1963) C: CNC, NFRC, PMAE, UASM | L Jul – M Aug | – | B | g |
| 1256 | | R | *Eulithis explanata* (Walker, 1862)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jul – E Aug | – | B | – |
| 1257 | * | R | *Eulithis xylina* (Hulst, 1896)<br>T: McDunnough (1943c)<br>L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – M Aug | m | B | g |
| 1258 | * | R | *Antepirrhoe semiatrata* (Hulst, 1881)<br>T: McDunnough (1945)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M Jul – E Aug | M | B | – |
| 1259 | | R | *Antepirrhoe atrifasciata* (Hulst, 1888)<br>L: Bowman (1951) C: BCSC, CNC | Jun | M | – | – |
| 1260 | | R H | *Ecliptopera silaceata* ([Denis and Schiffermüller], 1775)<br>T: Skou (1986)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – M Jul | M | B | – |
| 1261 | * | R | *Colostygia circumvallaria* (Taylor, 1906)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M Jul | M | – | – |
| 1262 | | R | *Plemyria georgii* (Hulst, 1896)<br>T: Choi (1998)<br>L: Bowman (1951), Prentice (1963), Ives and Wong (1988), Pohl et al. (2004b) C: CNC,NFRC, OLDS, PMAE, UASM | M Aug – E Sep | M | B | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1263 | * | R I | *Thera juniperata* (Linnaeus, 1758)<br>L: Bowman (1951) C: CNC, OLDS, UASM | Sep | – | B | – |
| 1264 | | R | *Thera otisi* (Dyar, 1904)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Ives and Wong (1988) C: CNC, NFRC, OLDS, UASM | Aug | M | B | – |
| 1265 | | R | *Ceratodalia gueneata* Packard, 1876<br>L: Bowman (1951), McGuffin (1958b) C: CNC | L Jun – E Jul? | M | – | – |
| 1266 | * | R | *Lampropteryx suffumata* ([Denis and Schiffermüller], 1775)<br>L: None C: CNC, UASM | L May – L Jun | M | – | – |
| **Hydriomenini** | | | | | | | |
| 1267 | | R | *Hydriomena perfracta* Swett, 1910<br>T: McDunnough (1954)<br>L: Bowman (1951), McDunnough (1954), Pohl et al. (2004b) C: CNC,NFRC, OLDS, UASM | L May – L Jun | m | B | – |
| 1268 | | R | *Hydriomena divisaria* Walker, 1860<br>T: McDunnough (1954)<br>L: McDunnough (1954), Prentice (1963) C: CNC, UASM | E Jun – E Jul | m | B | – |
| 1269 | | R | *Hydriomena renunciata* (Walker, 1862)<br>T: McDunnough (1954)<br>L: Bowman (1951), McDunnough (1954), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jun – M Jul | m | B | – |
| 1270 | * | R | *Hydriomena albimontanata* McDunnough, 1939<br>T: McDunnough (1954)<br>L: McDunnough (1954), McGuffin (1958b), Prentice (1963) C: CNC, NFRC, UASM | M Jun | M | – | – |
| 1271 | | R H | *Hydriomena ruberata* (Freyer, 1831)<br>T: McDunnough (1954), Skou (1986)<br>L: Bowman (1951), McDunnough (1954), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L May – L Jun | m | B | – |
| 1272 | | R | *Hydriomena macdunnoughi* Swett, 1918<br>T: McDunnough (1954)<br>L: Bowman (1951), McDunnough (1954), McGuffin (1958b) C: CNC, NFRC, OLDS, UASM | Jun | M | – | – |
| 1273 | | R H | *Hydriomena furcata* (Thunberg, 1784)<br>T: McDunnough (1954), Skou (1986)<br>L: Bowman (1951), McDunnough (1954), Prentice (1963), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jul – M Aug | m | B | – |
| 1274 | | R | *Hydriomena morosata* Barnes and McDunnough, 1917 | M Jun – E Jul | – | B | g |

T: McDunnough (1954)
L: Bowman (1951), McDunnough (1954) C: CNC

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| 1275 | | R | *Triphosa haesitata* (Guenée, [1858])<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E Apr – E May; M Sep – E Oct (H) | m | B | – |
| 1276 | * | R | *Coryphista meadii* (Packard, 1874)<br>T: Heitzman and Enns (1978)<br>L: Bowman (1951), McGuffin (1958b) C: CNC, UASM | L Jun – E Jul | M | – | – |
| 1277 | * | R H | *Rheumaptera undulata* (Linnaeus, 1758)<br>T: Ferguson (1955), Skou (1986)<br>L: Bowman (1951), Prentice (1963), Ives and Wong (1988) C: CNC, NFRC, OLDS, UASM | M Jul – E Aug | – | B | g |
| 1278 | * | R H | *Rheumaptera hastata* (Linnaeus, 1758)<br>T: McGuffin (1973), Skou (1986)<br>L: Bowman (1951), Prentice (1963), McGuffin (1973), Ives and Wong (1988) C: CNC, NFRC, PMAE, UASM | Jun – Jul | M | B | – |
| 1279 | * | R H | *Rheumaptera subhastata* (Nolcken, 1870)<br>T: McGuffin (1973), Skou (1986)<br>L: Bowman (1951), Prentice (1963), McGuffin (1973) C: CNC, NFRC, OLDS, UASM | Jun | – | B | – |
| 1280 | * | R | *Entephria multivagata* (Hulst, 1881)<br>T: Troubridge (1997)<br>L: Bowman (1951), Prentice (1963), Troubridge (1997) C: CNC, NFRC, UASM | Jul – Aug | M | b | – |
| 1281 | * | R | *Entephria lagganata* (Taylor, 1908)<br>T: Troubridge (1997)<br>L: Bowman (1951), Troubridge (1997) C: CNC, UASM | Aug | M | – | – |
| 1282 | * | R | *Entephria kidluitata* (Munroe, 1951)<br>T: Troubridge (1997)<br>L: Troubridge (1997) C: CNC, UASM | M Jul | M | – | – |
| 1283 | | R | *Mesoleuca ruficillata* (Guenée, [1858])<br>L: Bowman (1951), McGuffin (1958b), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – M Jul | m | B | g |
| 1284 | | R | *Mesoleuca gratulata* (Walker, 1862)<br>L: Bowman (1951), McGuffin (1958b) C: NFRC, OLDS, UASM | Jun | M | – | – |
| 1285 | * | R | *Spargania magnoliata* Guenée, [1858]<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | Jun – Jul | m | B | – |
| 1286 | * | R H | *Spargania luctuata* ([Denis and Schiffermüller], 1775)<br>T: Skou (1986) | L Jun – M Jul | m | B | – |

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| | | | L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | | | | | |
| 1287 | * | R | *Perizoma basaliata* (Walker, 1862)<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, OLDS, UASM | Jul | | m | B | – |
| 1288 | * | R | *Perizoma grandis* (Hulst, 1896)<br>L: None C: UASM | Jul | | M | – | – |
| 1289 | | R | *Perizoma custodiata* (Guenée, [1858])<br>L: Bowman (1951) C: CNC, OLDS, UASM | May – Aug | | – | b | G |
| 1290 | | R | *Anticlea vasiliata* Guenée, [1858]<br>T: Rindge (1967)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E – L May | | m | B | g |
| 1291 | | R | *Anticlea multiferata* (Walker, 1863)<br>T: Rindge (1967)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jun | | m | B | – |
| **Stamnodini** | | | | | | | | |
| 1292 | | R | *Stamnodes topazata* (Strecker, 1899)<br>L: Bowman (1951) C: CNC, OLDS, PMAE, UASM | L Apr – M May | | M | B | – |
| **Xanthorhoini** | | | | | | | | |
| 1293 | | R | *Xanthorhoe labradorensis* (Packard, 1867)<br>L: Bowman (1951) C: CNC, OLDS, UASM | L Jun | | M | B | g |
| 1294 | * | R | *Xanthorhoe packardata* McDunnough, 1945<br>L: None C: CNC, UASM | M Jun – M Jul | | – | B | g |
| 1295 | * | R H | *Xanthorhoe abrasaria* (Herrich-Schäffer, [1855])<br>T: Skou (1986)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC,NFRC, OLDS, PMAE, UASM | M Jul – E Aug | | m | B | – |
| 1296 | | R | *Xanthorhoe iduata* (Guenée, [1858])<br>L: Bowman (1951), Pohl et al. (2004b) C: NFRC, UASM | L Jul | | m | B | g |
| 1297 | * | R | *Xanthorhoe macdunnoughi* Swett, 1918<br>L: None C: BIRD, CNC | L Jun – L Jul | | M | – | – |
| 1298 | * | R | *Xanthorhoe ramaria* Swett and Cassino, 1920<br>L: None C: UASM | M Jun – L Jun | | – | B | – |
| 1299 | * | R | *Xanthorhoe delectaria* Cassino and Swett, 1922<br>L: None C: CNC, UASM | M Jun – L Jun | | M | – | – |
| 1300 | * | R H | *Xanthorhoe lagganata* Swett and Cassino, 1920<br>L: Bowman (1951) C: CNC, NFRC, UASM | M Jun – E Jul | | M | – | – |

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| 1301 | * | R | *Xanthorhoe reclivisata* Swett and Cassino, 1920<br>L: Cassino and Swett (1920) C: MCZ | M Jul | M | – | – |
| 1302 | * | R | *Xanthorhoe algidata* (Möschler, 1874)<br>L: None C: BCSC, UASM | L Jun – E Jul | m | B | – |
| 1303 | * | R | *Xanthorhoe fossaria* Taylor, 1906<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | M Jun – M Jul | M | – | – |
| 1304 | * | R H | *Xanthorhoe decoloraria* (Esper, [1806])<br>T: Skou (1986)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jul – M Aug | m | B | g |
| 1305 | * | R | *Xanthorhoe alticolata* Barnes and McDunnough, 1916<br>L: None C: UASM | Jul | M | – | – |
| 1306 | * | R H | *Xanthorhoe ferrugata* (Clerck, 1759)<br>T: Skou (1986)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L May – L Jun | m | B | – |
| 1307 | | R | *Xanthorhoe lacustrata* (Guenée, [1858])<br>T: Heitzman and Enns (1978)<br>L: Bowman (1951), McGuffin (1958b), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E – L Jun | – | B | g |
| 1308 | | R H | *Epirrhoe alternata* (Müller, 1764)<br>T: Skou (1986)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E – L Jul | m | B | g |
| 1309 | | R | *Epirrhoe plebeculata* (Guenée, [1858])<br>L: Bowman (1951), McGuffin (1958b) C: CNC, NFRC, OLDS, PMAE, UASM | L Apr – E May | m | B | g |
| 1310 | * | R | *Epirrhoe sperryi* Herbulot, 1951<br>L: Bowman (1951), Herbulot (1951), McGuffin (1958b) C: CNC, NFRC, OLDS, PMAE, UASM | M May | m | B | g |
| 1311 | * | R H | *Euphyia intermediata* (Guenée, [1858])<br>T: Skou (1986)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | M | B | – |
| 1312 | * | R | *Zenophleps alpinata* Cassino, 1927<br>L: [Bowman (1951)], [McGuffin (1958b)], [Prentice (1963)], [Pohl et al. (2004b)] C: CNC, NFRC, OLDS, PMAE, UASM | E Aug – M Sep | m | B | g |
| 1313 | * | R | *Psychophora* sp. nr. *suttoni* Heinrich, 1942<br>L: Bowman (1951) C: UASM | Jul – Aug | M | – | – |
| 1314 | * | M | *Orthonama obstipata* (Fabricius, 1794)<br>T: Heitzman and Enns (1978), Skou (1986)<br>L: Bowman (1951) C: CNC, PMAE, UASM | L Jul – L Sep | m | b | g |
| 1315 | * | R | *Orthonama evansi* McDunnough, 1920<br>L: Bowman (1951) C: CNC, UASM | Aug | – | b | G |

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| 1315.1 | * | P | *Orthonama centrostrigaria* (Wollaston, 1858) | Aug? | – | – | g |

**Asthenini**

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| 1315.2 | * | P | *Hydrelia inornata* (Hulst, 1896) | M Jun – L Jun? | – | B | – |
| 1316 | | R | *Hydrelia albifera* (Walker, 1866)<br>L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun | – | B | g |
| 1317 | | R H | *Venusia cambrica* Curtis, 1839<br>T: Skou (1986)<br>L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jun – M Jul | m | B | – |
| 1318 | * | R | *Venusia comptaria* (Walker, 1860)<br>L: None C: CNC, NFRC, UASM | L Apr – L May | – | B | g |
| 1319 | * | R | *Venusia pearsalli* (Dyar, 1906)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E – L May | M | b | g |
| 1320 | | R | *Trichodezia albovittata* (Guenée, [1858])<br>T: Heitzman and Enns (1978)<br>L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | L Jun – M Jul | m | B | – |
| 1321 | * | S I | *Minoa murinata* (Scopoli, 1763)<br>Drab Looper<br>L: McClay et al. (1995) C: Unknown | Jul – Aug | – | b | G |

**Operophterini**

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|---|---|---|---|---|---|---|---|
| 1322 | | R H | *Epirrita autumnata* (Borkhausen, 1794)<br>T: Skou (1986)<br>L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Sep | m | B | – |
| 1323 | * | R | *Epirrita undulata* (Harrison, 1942)<br>L: Bowman (1951) C: CNC, OLDS, PMAE, UASM | L Aug – M Sep | M | – | – |
| 1324 | * | R | *Operophtera bruceata* (Hulst, 1886)<br>Bruce Spanworm<br>T: Troubridge and Fitzpatrick (1993)<br>L: Bowman (1951), Prentice (1963), Ives and Wong (1988), Troubridge and Fitzpatrick (1993), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Sep – L Oct | m | B | g |

**Eudelini**

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|---|---|---|---|---|---|---|---|
| 1325 | | R | *Eubaphe mendica* (Walker, 1854)<br>T: Fletcher (1954) | E – L Jul | – | B | g |

L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

**Eupitheciini**

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| 1326 | | R | *Horisme intestinata* (Guenée, [1858]) | E Jun – M Jul | m | B | g |
| | | | T: Heitzman and Enns (1978) | | | | |
| | | | L: Bowman (1951) C: CNC, NFRC, PMAE, UASM | | | | |
| 1327 | * | R | *Horisme incana* Swett, 1918 | L May – L Jun | m | b | G |
| | | | L: Bowman (1951) C: CNC, PMAE, UASM | | | | |
| 1328 | * | R | *Eupithecia ornata* (Hulst, 1896) | E – L Jun | M | – | – |
| | | | T: Bolte (1990) | | | | |
| | | | L: McGuffin (1958b), Prentice (1963), Bolte (1990) C: CNC, NFRC, UASM | | | | |
| 1329 | | R | *Eupithecia pseudotsugata* MacKay, 1951 | L May – L Jun | M | – | – |
| | | | T: Bolte (1990) | | | | |
| | | | L: McGuffin (1958b), Prentice (1963), Bolte (1990) C: NFRC | | | | |
| 1330 | * | R | *Eupithecia palpata* Packard, 1873 | L May – L Jun | m | B | – |
| | | | T: Bolte (1990) | | | | |
| | | | L: Bowman (1951), Prentice (1963), Ives and Wong (1988), Bolte (1990) C: CNC, NFRC, UASM | | | | |
| 1330.1 | * | P | *Eupithecia placidata* Taylor, 1908 | Jul | M | – | – |
| | | | T: Bolte (1990) | | | | |
| 1331 | | R | *Eupithecia maestosa* (Hulst, 1896) | Jun | M | – | – |
| | | | T: Bolte (1990) | | | | |
| | | | L: Bolte (1990) C: CNC, NFRC | | | | |
| 1332 | | R | *Eupithecia columbiata* Dyar, 1904 | L Apr – L May | – | B | g |
| | | | T: Bolte (1990) | | | | |
| | | | L: Bowman (1951), McGuffin (1958b), Prentice (1963), Bolte (1990), Pohl et al. (2004b) C: CNC, NFRC, UASM | | | | |
| 1333 | * | R | *Eupithecia niveifascia* (Hulst, 1898) | E Jul | M | – | – |
| | | | T: Bolte (1990) | | | | |
| | | | L: None C: CNC, UASM | | | | |
| 1334 | * | R | *Eupithecia bowmani* Cassino and Swett, 1923 | M Jun – M Jul | M | – | – |
| | | | T: Bolte (1990) | | | | |
| | | | L: Bowman (1951), Bolte (1990) C: UASM | | | | |
| 1335 | | R | *Eupithecia stellata* (Hulst, 1896) | L Jul – L Aug | – | b | G |
| | | | T: Bolte (1990) | | | | |
| | | | L: Bowman (1951), Bolte (1990), Pohl et al. (2004b) C: CNC, NFRC, UASM | | | | |

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|---|---|---|---|---|---|---|---|---|
| 1336 | | R H | *Eupithecia subfuscata* (Haworth, 1809)<br>T: Skou (1986), Bolte (1990), Hausmann (2003)<br>L: Bowman (1951), Prentice (1963), Bolte (1990), Pohl et al. (2004b) C: CNC, NFRC, UASM | E – L Jun | m | B | g |
| 1337 | | R H | *Eupithecia pygmaeata* (Hübner, 1799)<br>T: Skou (1986), Bolte (1990), Hausmann (2003)<br>L: Bowman (1951), Bolte (1990) C: CNC, UASM | L Jun – E Jul | m | B | – |
| 1338 | * | R | *Eupithecia lafontaineata* Bolte, 1990<br>T: Bolte (1990)<br>L: [Bowman (1951)], Bolte (1990) C: CNC, UASM | E Jun – M Jul | M | – | g |
| 1339 | | R | *Eupithecia misturata* (Hulst, 1896)<br>T: Bolte (1990)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Bolte (1990) C: CNC, NFRC, UASM | M May – L Jun | m | B | – |
| 1340 | | R | *Eupithecia albicapitata* Packard, 1876<br>T: Bolte (1990)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Bolte (1990) C: CNC, NFRC, UASM | M Jun – E Jul | m | B | g |
| 1341 | * | R | *Eupithecia mutata* Pearsall, 1908<br>T: Bolte (1990)<br>L: Prentice (1963), Bolte (1990) C: CNC, NFRC, UASM | L May – M Jun | – | B | – |
| 1342 | * | R | *Eupithecia columbrata* McDunnough, 1940<br>T: Bolte (1990)<br>L: Bolte (1990) C: CNC, UASM | M Jun – M Jul | M | – | – |
| 1343 | * | R | *Eupithecia graefii* (Hulst, 1896)<br>T: Bolte (1990)<br>L: None C: UASM | E Jul | M | – | – |
| 1344 | | R | *Eupithecia borealis* (Hulst, 1898)<br>T: Bolte (1990)<br>L: Bowman (1951), Bolte (1990) C: CNC, UASM | M Jul – L Jul | m | B | g |
| 1345 | | R | *Eupithecia anticaria* Walker, 1862<br>T: Bolte (1990)<br>L: Bowman (1951), Bolte (1990), Pohl et al. (2004b) C: CNC, NFRC, UASM | E Jun – E Jul | m | B | g |
| 1346 | | R | *Eupithecia ravocostaliata* Packard, 1876<br>T: Bolte (1990)<br>L: Bowman (1951), Prentice (1963), Bolte (1990), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E May – E Jun | m | B | g |
| 1347 | * | R | *Eupithecia lariciata* (Freyer, 1842)<br>T: Skou (1986), Bolte (1990), Hausmann (2003) | E – L Jun | m | B | g |

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| | | | L: Bowman (1951), Prentice (1963), Ives and Wong (1988), Bolte (1990) C: CNC, NFRC, UASM | | | | |
| 1348 | * | R | *Eupithecia sharronata* Bolte, 1990<br>T: Bolte (1990)<br>L: Bolte (1990) C: CNC, UASM | L May | M | – | – |
| 1349 | * | R | *Eupithecia casloata* (Dyar, 1904)<br>T: Bolte (1990)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Bolte (1990) C: CNC, NFRC, UASM | M Jun – E Jul | m | B | – |
| 1350 | * | R | *Eupithecia annulata* (Hulst, 1896)<br>T: Bolte (1990)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Ives and Wong (1988), Bolte (1990) C: CNC, NFRC, UASM | M Apr – M May | m | B | g |
| 1351 | | R | *Eupithecia interruptofasciata* Packard, 1873<br>T: Bolte (1990)<br>L: Ives and Wong (1988), Bolte (1990) C: CNC, NFRC | Aug – Sep | m | B | – |
| 1352 | | R | *Eupithecia niphadophilata* (Dyar, 1904)<br>T: Bolte (1990)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Bolte (1990) C: CNC, NFRC, UASM | L Jul – L Aug | M | – | – |
| 1353 | | R | *Eupithecia sheppardata* McDunnough, 1938<br>T: Bolte (1990)<br>L: McGuffin (1958b), Prentice (1963), Bolte (1990) C: CNC, NFRC | L May – L Jun | – | B | – |
| 1354 | | R H | *Eupithecia intricata* (Zetterstedt, 1939)<br>T: Skou (1986), Bolte (1990), Hausmann (2003)<br>L: Prentice (1963), Bolte (1990) C: CNC, UASM | M Jun | M | B | – |
| 1355 | * | R h | *Eupithecia satyrata* (Hübner, 1813)<br>T: Skou (1986), Bolte (1990), Hausmann (2003)<br>L: Bowman (1951), McGuffin (1958b), Bolte (1990), Pohl et al. (2004b) C: CNC, NFRC, UASM | L May – L Jun | m | B | g |
| 1356 | * | R | *Eupithecia absinthiata* (Clemens, 1759)<br>T: Skou (1986), Bolte (1990), Hausmann (2003)<br>L: Bowman (1951), Prentice (1963), Bolte (1990) C: CNC, UASM | M Jul – L Jul | m | B | g |
| 1357 | * | R | *Eupithecia nimbicolor* (Hulst, 1896)<br>T: Bolte (1990)<br>L: Bowman (1951), Bolte (1990) C: CNC, NFRC, UASM | L May – M Jun | m | B | g |
| 1358 | | R | *Eupithecia cretaceata* (Packard, 1874)<br>T: Bolte (1990) | M Jul | m | B | g |

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|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Bolte (1990) C: CNC, NFRC, OLDS, UASM | | | | |
| 1359 | * | R | *Eupithecia behrensata* Packard, 1876<br>T: Bolte (1990)<br>L: None C: CNC, UASM | M Jun | – | – | G |
| 1360 | | R | *Eupithecia assimilata* Doubleday, 1856<br>T: Skou (1986), Bolte (1990), Hausmann (2003)<br>L: Bolte (1990), Pohl et al. (2004b) C: CNC, NFRC | Jul? | m | B | g |
| 1361 | * | R | *Eupithecia russeliata* Swett, 1908<br>T: Bolte (1990)<br>L: Schmidt and Pohl (2000) C: CNC, UASM | M Jun | – | B | – |
| 1362 | * | R | *Eupithecia ammonata* McDunnough, 1929<br>T: Bolte (1990)<br>L: Bowman (1951), Bolte (1990) C: CNC, UASM | L Jun – M Jul | – | b | G |
| 1363 | | R | *Eupithecia cimicifugata* Pearsall, 1908<br>T: Bolte (1990)<br>L: Bowman (1951), Bolte (1990) C: CNC, UASM | M Jun – L Jun | – | B | g |
| 1364 | | R | *Eupithecia perfusca* (Hulst, 1898)<br>T: Bolte (1990)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Bolte (1990), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jun – M Jul | m | B | – |
| 1365 | | R | *Eupithecia multistrigata* (Hulst, 1896)<br>T: Bolte (1990)<br>L: Bowman (1951), Bolte (1990) C: CNC, NFRC, UASM | L Aug – E Sep | M | b | – |
| 1366 | | R H | *Eupithecia gelidata* Möschler, 1860<br>T: Skou (1986), Bolte (1990), Hausmann (2003)<br>L: Bowman (1951), Prentice (1963), Bolte (1990) C: CNC, NFRC, UASM | M Jun – E Jul | M | B | g |
| 1367 | * | R | *Eupithecia lachrymosa* (Hulst, 1900)<br>T: Bolte (1990)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Bolte (1990) C: CNC, NFRC, UASM | E – L Jun | m | – | G |
| 1368 | * | R | *Eupithecia coloradensis* (Hulst, 1896)<br>T: Bolte (1990)<br>L: Bolte (1990) C: CNC, UASM | L Jul | – | – | G |
| 1369 | | R | *Eupithecia bryanti* Taylor, 1906<br>T: Bolte (1990)<br>L: Bowman (1951), McGuffin (1958b), Prentice (1963), Bolte (1990) C: CNC, NFRC, UASM | L Jul | M | – | – |
| 1370 | | R | *Eupithecia regina* Taylor, 1906 | L Jun – M Jul | – | b | G |

T: Bolte (1990)
L: Bowman (1951), Bolte (1990) C: CNC, UASM

1371 R H *Eupithecia tripunctaria* Herrich-Schäffer, 1852 L Jun – M Jul m B g
T: Skou (1986), Bolte (1990), Hausmann (2003)
L: Bowman (1951), Bolte (1990) C: CNC, UASM

**Lobophorini**

1372 * R H *Carsia sororiata* (Hübner, 1813) E – L Aug m B –
T: Skou (1986)
L: Bowman (1951) C: CNC, UASM

1373 R *Acasis viridata* (Packard, 1873) E – L May – B g
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM

1374 R *Cladara limitaria* (Walker, 1860) L Apr – L May m B g
L: Bowman (1951), Prentice (1963), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

1375 R *Cladara atroliturata* (Walker, 1863) L Apr – L May m B –
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

1376 * R *Lobophora nivigerata* Walker, 1862 M Jun – E Jul – B g
L: Bowman (1951), McGuffin (1958b), Prentice (1963), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

1377 * R *Lobophora magnoliatoidata* (Dyar, 1904) M Jun – L Jun M – –
L: McGuffin (1958b), Prentice (1963) C: CNC, OLDS, UASM

### *55.2. Sterrhinae – wave moths*

Small moths (20–30 mm wingspan) with wings usually pale yellow, tan, or brown, and variously marked with diffuse dark bands and scattered dark scales. A few species have pastel shades. They can be separated from other geometrids by wing venation: on the hindwing, the Sc and $R_1$ veins are fused with the Rs vein for less than one-quarter the length of the discal cell. Larvae of most species feed on trees or shrubs.

Approximately 2800 species of Sterrhinae are known worldwide. Ninety-six species of Sterrhinae are known in North America; 16 occur in AB. The Canadian species were revised by McGuffin (1967), and the genus *Scopula* was treated again by Covell (1970). Sihvonen and Kaila (2004) and Sihvonen (2005) presented a global phylogeny of the subfamily.

**Sterrhini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1378 | * | R | *Idaea occidentaria* (Packard, 1874)<br>L: None C: J. Scott collection | M Jul | – | – | G |
| 1379 | | R | *Idaea rotundopennata* (Packard, 1876)<br>T: McGuffin (1967)<br>L: Bowman (1951), McGuffin (1967), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jun – E Jul | m | B | – |
| **Cosymbiini** | | | | | | | |
| 1380 | | R | *Cyclophora pendulinaria* (Guenée, [1858])<br>T: McGuffin (1967)<br>L: Bowman (1951), Prentice (1963), McGuffin (1967), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E Jun – E Jul | m | B | g |
| **Timandrini** | | | | | | | |
| 1381 | | R | *Haematopis grataria* (Fabricius, 1798)<br>T: McGuffin (1967)<br>L: Bowman (1951), McGuffin (1967) C: CNC, UASM | L May – M Aug | – | – | G |
| **Scopulini** | | | | | | | |
| 1382 | * | R | *Scopula cacuminaria* (Morrison, 1874)<br>T: McGuffin (1967), Covell (1970)<br>L: None C: UASM | Jul | – | – | g |
| 1383 | | R | *Scopula limboundata* (Haworth, 1809)<br>T: McGuffin (1967), Covell (1970)<br>L: Bowman (1951), McGuffin (1967), Covell (1970), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jul – E Aug | – | B | g |
| 1384 | | R | *Scopula ancellata* (Hulst, 1887)<br>T: McGuffin (1967), Covell (1970)<br>L: Bowman (1951), McGuffin (1967), Covell (1970), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | Jul | m | B | g |
| 1385 | | R | *Scopula fuscata* (Hulst, 1887)<br>T: McGuffin (1967), Covell (1970)<br>L: Bowman (1951), McGuffin (1967), Covell (1970) C: CNC, OLDS, UASM | L Jun – M Jul | M | – | g |
| 1386 | * | R | *Scopula junctaria* (Walker, 1861)<br>T: McGuffin (1967), Covell (1970)<br>L: Bowman (1951), McGuffin (1967), Covell (1970), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – L Jul | – | – | g |
| 1387 | * | R | *Scopula quinquelinearia* (Packard, 1870) | E Jul | M | – | g |

T: McGuffin (1967), Covell (1970)
L: Bowman (1951) C: CNC, UASM

1387.1 * P *Scopula quadrilineata* (Packard, 1876) Jun? – b –
T: McGuffin (1967), Covell (1970)

1388 * R H *Scopula frigidaria* (Möschler, 1860) L Jun – L Jul m B –
T: McGuffin (1967), Covell (1970), Skou (1986)
L: Bowman (1951), McGuffin (1967), Covell (1970), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

1389 * R *Scopula siccata* McDunnough, 1939 Jul M – –
T: McGuffin (1967), Covell (1970)
L: None C: CNC, UASM

1390 R *Scopula inductata* (Guenée, [1858]) M Jun – E Jul m B –
T: McGuffin (1967), Covell (1970)
L: Bowman (1951), McGuffin (1967), Covell (1970) C: CNC: OLDS, PMAE, UASM

1391 * R *Scopula luteolata* (Hulst, 1880) L Jun M – g
T: McGuffin (1967), Covell (1970)
L: Bowman (1951), McGuffin (1967), Covell (1970) C: CNC, NFRC, OLDS, UASM

1392 * R H *Scopula sentinaria* (Geyer, 1837) M Jun – E Jul m B –
T: McGuffin (1967), Covell (1970), Skou (1986)
L: Bowman (1951), McGuffin (1967) C: CNC, OLDS, UASM

1393 * R *Leptostales ferruminaria* (Zeller, 1872) L May – E Jun – – G
T: McGuffin (1967)
L: None C: CNC, OLDS, UASM

### *55.3. Geometrinae – emerald moths*

Small (20–30 mm wingspan) moths, usually with bright green wings (occasionally brown or yellow, or crypic in some Old World species). The green pigment fades when exposed to moisture and often appears yellow, even in living specimens. These moths can be separated from other geometrids by wing venation: in both the fore- and hind-wing, vein $M_2$ arises distinctly above the middle of the discal cell.

Approximately 2300 species of Geometrinae are known worldwide, primarily from the tropics. Seventy-four species are known in North America, eight of which are known from AB. The group was revised by Ferguson (1985a); most Canadian species were also treated by McGuffin (1988).

**Nemoriini**

1394 R *Nemoria unitaria* (Packard, 1873) M Jul – L Jul – B G
T: Ferguson (1985a), McGuffin (1988)
L: Bowman (1951), Ferguson (1985a), McGuffin (1988) C: CNC, NFRC, OLDS, PMAE, UASM

1395 * R *Nemoria darwiniata* (Dyar, 1904) Jun – Aug M – –
T: Ferguson (1985a), McGuffin (1988)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: McGuffin (1988) C: CNC | | | | | |
| 1396 | * | R | *Nemoria rubrifrontaria* (Packard, 1873)<br>T: Ferguson (1985a), McGuffin (1988)<br>L: None C: PMAE, UASM | M Jun | – | B | – |
| 1397 | | R | *Nemoria mimosaria* (Guenée, [1858])<br>T: Ferguson (1985a), McGuffin (1988)<br>L: McGuffin (1988) C: CNC, UASM | Jun | – | b | G |
| **Synchlorini** | | | | | | | |
| 1398 | * | R | *Dichorda rectaria* (Grote, 1877)<br>T: Ferguson (1985a)<br>L: None C: RSM | Jun | – | – | G |
| 1399 | * | R | *Synchlora aerata* (Fabricius, 1798)<br>T: Ferguson (1985a), McGuffin (1988)<br>L: Ferguson (1985a), McGuffin (1988) C: CNC, OLDS, UASM | M Jul – E Aug | – | B | g |
| 1400 | * | R | *Synchlora bistriaria* (Packard, 1876)<br>T: Ferguson (1985a), McGuffin (1988)<br>L: Bowman (1951), Ferguson (1985a), McGuffin (1988) C: CNC,OLDS, UASM | Jul | – | – | G |
| **Hemitheini** | | | | | | | |
| 1401 | * | R | *Mesothea incertata* (Hulst, 1862)<br>T: Ferguson (1985a), McGuffin (1988)<br>L: Bowman (1951), Prentice (1963), Ferguson (1985a), McGuffin (1988) C: CNC, NFRC, OLDS, PMAE, UASM | M May – E Jun | m | B | – |

### *55.4. Archiearinae – infant moths*

Medium-sized (25–35 mm wingspan) moths, most of which are brightly colored diurnal moths that fly very early in the spring. They can be distinguished from other geometrids by their relatively stout hairy bodies and small oval eyes. The larvae of some species have more than two pairs of prolegs, but the additional pairs are reduced in size and they still move in the typical looper fashion.

Twelve species of Archiearinae are known worldwide, from colder areas of the northern and southern hemispheres. Two species are known in North America, both of which occur in AB. The North American species in the subfamily were treated by McGuffin (1988).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1402 | * | R | *Archiearis infans* (Möschler, 1862)<br>T: McGuffin (1988) | L Apr – L May | m | B | – |

L: Bowman (1951), Prentice (1963), McGuffin (1988) C: CNC, NFRC, OLDS, PMAE, UASM

1403 * R *Leucobrephos brephoides* (Walker, 1857) L Apr – L May m B g
T: McGuffin (1988)
L: Bowman (1951), Prentice (1963), McGuffin (1988) C: CNC, PMAE, UASM

### *55.5. Ennominae – ennomine moths*

Small to large (20–70 mm wingspan) moths. The Ennominae are defined by the absence of $M_2$ as a tubular vein in the hindwing, but this character is not completely reliable, and the group may not be monophyletic. The genus *Alsophila* (two Palearctic and one Nearctic species) is included here in the tribe Alsophilini, according to the work of Young (2006). Females of a few species are wingless. Larvae of most species feed on the foliage of trees and shrubs, and a few are pests, including the Fall Cankerworm (*Alsophila pometaria*).

Ennominae is the most species-rich geometrid subfamily in the world, with over 9700 described species. Approximately 750 species are known from North America; 130 have been reported from AB. The group is relatively well known. McGuffin (1972, 1977, 1981, 1987, 1988) treated most of the Canadian species; his work was based in large part on a series of revisions of the North American taxa by Rindge and others, which generally provided more detail. The Cassymini and Macariini were thoroughly covered for North America by Ferguson (2008). In the Boarmiini, the genera *Hesperumia* (Rindge 1974c), *Iridopsis* (Rindge 1966), and *Stenoporpia* (Rindge 1968) have been thoroughly covered. Most Bistonini were covered by Rindge (1975), the Baptini by Rindge (1979), and most Caberini by Rindge (1949, 1956b). The Angeronini genera covered elsewhere are *Aspitates* (Munroe 1963), *Pero* (Poole 1987), and *Xanthotype* (Rindge 1978). The Nachophorini genera *Gabriola* and *Animomyia* were covered by Rindge (1974a, 1974b). The Lithinini genus *Tacparia* was treated by Ferguson (1973). The Ourapterygini genera covered elsewhere are *Enypia* (Evans 1960), *Meris* (Rindge 1981), *Nematocampa* (Ferguson 1993), *Plataea* (Rindge 1976), and *Synaxis* (Ferris and Schmidt 2010).

**Alsophilini**

1404 * R *Alsophila pometaria* (Harris, 1841) L Sep – L Oct – B g
Fall Cankerworm
T: McGuffin (1988)
L: Bowman (1951), Prentice (1963), McGuffin (1988), Hiratsuka et al. (1995) C: CNC, NFRC, UASM

**Cassymini**

1405 * R *Nematocampa resistaria* (Herrich-Schäffer, [1855]) E – L Aug m B g
T: McGuffin (1987), Ferguson (1993, 2008)

L: Bowman (1951), Prentice (1963), McGuffin (1987), Pohl et al. (2004b), Ferguson (2008) C: CNC, NFRC, OLDS, PMAE, UASM

1406 * R *Protitame virginalis* (Hulst, 1900) E – L Jun m B g
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), Prentice (1963), McGuffin (1972), Ives and Wong (1988), Pohl et al. (2004b), Ferguson (2008) C: CNC, NFRC, UASM

1407 * R *Protitame subalbaria* (Packard, 1873) Jun M – g
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, UASM

**Macariini**

1408 * R *Eumacaria madopata* (Guenée, [1858]) L Jun – M Jul – b G
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), Ferguson (2008) C: CNC, OLDS, UASM

1409 R H *Speranza brunneata* (Thunberg, 1784) E Jul – M Jul m B g
T: McGuffin (1972), Skou (1986), Ferguson (2008)
L: Bowman (1951), McGuffin (1972), Pohl et al. (2004b), Ferguson (2008) C: CNC, NFRC, OLDS, UASM

1410 * R *Speranza amboflava* (Ferguson, 1953) Jul m B g
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, NFRC, OLDS, UASM

1411 * R *Speranza boreata* Ferguson, 2008 Jul m B –
T: [McGuffin (1972)], Ferguson (2008)
L: [Bowman (1951)], [Prentice (1963)], [McGuffin (1972)], Ferguson (2008) C: CNC, NFRC, UASM

1412 R *Speranza exauspicata* (Walker, 1861) Jul m B g
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), Prentice (1963), McGuffin (1972), Ives and Wong (1988), Ferguson (2008) C: CNC, NFRC, OLDS, UASM

1413 * R *Speranza coortaria* (Hulst, 1887) L Jul – b g
T: McGuffin (1972), Ferguson (2008)
L: None C: BCSC, DAM

1414 R *Speranza bitactata* (Walker, 1862) M Jul – E Aug m B g
T: McGuffin (1972), Ferguson (2008)

L: Bowman (1951), Prentice (1963), McGuffin (1972), Pohl et al. (2004b), Ferguson (2008) C: CNC, NFRC, OLDS, UASM

1415 * R *Speranza decorata* (Hulst, 1896) M Jul M b g
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, NFRC, UASM

1416 * R *Speranza occiduaria* (Packard, 1874) Jul m B g
T: Ferguson (1953), McGuffin (1972), Ferguson (2008)
L: Bowman (1951), Ferguson (1953), McGuffin (1972), Ferguson (2008) C: CNC, NFRC, OLDS, PMAE, UASM

1417 * R *Speranza helena* (Cassino, 1928) Aug – – G
T: Ferguson (2008)
L: None C: UASM

1418 R *Speranza ribearia* (Fitch, 1848) Jul – – G
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, NFRC, UASM

1419 * R *Speranza quadrilinearia* (Packard, 1873) Aug – – G
T: McGuffin (1972), Ferguson (2008)
L: None C: UASM

1420 R *Speranza simplex* (Dyar, 1907) M Jul M – –
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, OLDS, UASM

1421 * R H *Speranza loricaria* (Hulst, 1837) E Jul – M Jul m B g
T: McGuffin (1972), Skou (1986), Ferguson (2008)
L: Bowman (1951), Prentice (1963), McGuffin (1972), Ives and Wong (1988), Pohl et al. (2004b), Ferguson (2008) C: CNC, NFRC, OLDS, PMAE, UASM

1422 * R *Speranza plumosata* (Barnes and McDunnough, 1917) Jul M – –
T: McGuffin (1972), Ferguson (2008)
L: None C: UASM

1423 * R *Epelis truncataria* (Walker, 1862) M May – M Jun m B –
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, NFRC, PMAE, UASM

1424 * R H *Macaria notata* (Linnaeus, 1758) L Jun – E Jul m B –
T: McGuffin (1972), Ferguson (2008)
L: Bowman (1951), Prentice (1963), McGuffin (1972), Ives and Wong (1988), Pohl et al. (2004b), Ferguson (2008) C: CNC, NFRC, OLDS, UASM

1425 R *Macaria aemulataria* (Walker, 1861) M Jul – B g

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | T: McGuffin (1972), Ferguson (2008) L: Bowman (1951), Prentice (1963), McGuffin (1972), Ferguson (2008) C: CNC, NFRC, PMAE, UASM | | | | | |
| 1426 | * | R | *Macaria masquerata* Ferguson, 2008 T: Ferguson (2008) L: [Prentice (1963)], [McGuffin (1972)], Ferguson (2008) C: CNC, NFRC | L Jun – E Jul | – | B | – | |
| 1427 | * | U | *Macaria adonis* (Barnes and McDunnough, 1918) T: McGuffin (1972), Ferguson (2008) L: None C: UASM | May – Jul? | M | – | – | |
| 1428 | * | R | *Macaria sexmaculata* Packard, 1867 T: McGuffin (1972), Ferguson (1974, 2008) L: Bowman (1951), Prentice (1963), McGuffin (1972), Ferguson (1974, 2008) C: CNC, NFRC, OLDS, UASM | Jul | M | B | – | |
| 1429 | * | R | *Macaria signaria* (Hübner, 1809) T: McGuffin (1972), Ferguson (1974, 2008), Skou (1986) L: Bowman (1951), McGuffin (1972), Ferguson (1974, 2008), Pohl et al. (2004b) C: CNC, NFRC, UASM | Jun | M | B | – | |
| 1430 | | R | *Macaria oweni* (Swett, 1907) T: McGuffin (1972), Ferguson (1974, 2008) L: Bowman (1951), Prentice (1963), Ferguson (1974, 2008) C: CNC, NFRC, OLDS, UASM | M May – L Jun | m | B | – | |
| 1431 | * | R | *Digrammia californiaria* (Packard, 1871) T: McGuffin (1972), Ferguson (2008) L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, UASM | M May – M Jun; Aug (2Br?) | – | – | G | |
| 1432 | * | R | *Digrammia delectata* (Hulst, 1887) T: McGuffin (1972), Ferguson (2008) L: None C: UASM | Jul | M | – | – | |
| 1433 | | R | *Digrammia denticulata* (Grote, 1883) T: McGuffin (1972), Ferguson (2008) L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, NFRC, OLDS, UASM | Jun | m | B | g | |
| 1434 | | R | *Digrammia curvata* (Grote, 1880) T: McGuffin (1972), Ferguson (2008) L: McGuffin (1972), Ferguson (2008) C: CNC, OLDS, UASM | M May – L Jun | – | – | G | |
| 1434.1 | * | P | *Digrammia triviata* (Barnes and Benjamin, 1917) T: McGuffin (1972), Ferguson (2008) | May – Jun; Aug – Sep (2Br?) | M | – | – | |
| 1435 | * | R | *Digrammia setonana* (McDunnough, 1927) T: McGuffin (1972), Ferguson (2008) | Jun | M | – | – | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Prentice (1963), McGuffin (1972), Ferguson (2008) C: CNC | | | | | |
| 1436 | * | R | *Digrammia rippertaria* (Duponchel, 1830)<br>T: McGuffin (1972), Skou (1986), Ferguson (2008)<br>L: Bowman (1951), Prentice (1963), McGuffin (1972), Ives and Wong (1988), Pohl et al. (2004b), Ferguson (2008) C: CNC, NFRC, OLDS, UASM | Jul | m | B | g |
| 1437 | * | R | *Digrammia decorata* (Grossbeck, 1907)<br>T: McGuffin (1972), Ferguson (2008)<br>L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, OLDS, UASM | L Jun – L Aug | – | – | G |
| 1438 | | R | *Digrammia mellistrigata* (Grote, 1873)<br>T: McGuffin (1972), Ferguson (2008)<br>L: Bowman (1951), Prentice (1963), McGuffin (1972), Ferguson (2008) C: CNC, NFRC, OLDS, UASM | E – L Jul | m | B | g |
| 1439 | * | R | *Digrammia subminiata* (Packard, 1873)<br>T: McGuffin (1972), Ferguson (2008)<br>L: Bowman (1951), McGuffin (1972), Ferguson (2008) C: CNC, UASM | M May – L Jun; Aug (2Br?) | – | – | G |
| 1440 | | R | *Digrammia neptaria* (Guenée, [1858])<br>T: McGuffin (1972), Ferguson (2008)<br>L: Bowman (1951), Prentice (1963), McGuffin (1972), Ferguson (2008) C: CNC, NFRC, OLDS, UASM | Jun | M | b | g |
| 1441 | * | R | *Digrammia irrorata* (Packard, 1876)<br>T: McGuffin (1972), Ferguson (2008)<br>L: None C: CNC, UASM | E Jun | – | – | G |
| 1442 | * | R | *Fernaldella fimetaria* (Grote and Robinson, 1870)<br>T: McGuffin (1972), Ferguson (2008)<br>L: McGuffin (1972), Ferguson (2008) C: CNC, UASM | Jun | – | – | G |
| **Boarmiini** | | | | | | | | |
| 1443 | | R | *Dasyfidonia avuncularia* (Guenée, [1858])<br>T: McGuffin (1977)<br>L: Bowman (1951), McGuffin (1977) C: CNC, UASM | L May – M Jun | M | – | – |
| 1444 | * | R | *Orthofidonia tinctaria* (Walker, 1860)<br>T: McGuffin (1977)<br>L: Bowman (1951), [McGuffin (1977)], [Pohl et al. (2004b)] C: CNC, NFRC, UASM | E May – E Jun | m | B | – |
| 1445 | | R | *Hesperumia sulphuraria* Packard, 1873 | M Jul – E Aug | M | b | g |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | T: Rindge (1974c), McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), Rindge (1974c), McGuffin (1977), Ives and Wong (1988) C: CNC, NFRC, OLDS, PMAE, UASM | | | | | |
| 1446 | * | U | *Neoalcis californiaria* (Packard, 1871)<br>T: McGuffin (1977)<br>L: None C: UASM | E Jul | M | – | g |
| 1447 | * | R | *Ematurga amitaria* (Guenée, [1858])<br>T: McGuffin (1977)<br>L: Bowman (1951), McGuffin (1977) C: CNC, NFRC, UASM | Jun | – | B | g |
| 1448 | | R | *Stenoporpia pulmonaria* (Barnes and Benjamin, 1881)<br>T: Rindge (1968), McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), Rindge (1968), McGuffin (1977) C: CNC, OLDS, UASM | Aug | M | – | – |
| 1449 | | R | *Stenoporpia separataria* (Grote, 1883)<br>T: Rindge (1968), McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), Rindge (1968), McGuffin (1977) C: CNC, NFRC, OLDS, UASM | Jun – E Jul | M | – | – |
| 1450 | | R | *Aethalura intertexta* (Walker, 1860)<br>T: McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), McGuffin (1977), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E May – E Jun | m | B | g |
| 1450.1 | * | P | *Iridopsis vellivolata* (Hulst, 1881)<br>T: Rindge (1966), McGuffin (1977) | Jun? | – | B | – |
| 1451 | | R | *Iridopsis ephyraria* (Walker, 1860)<br>T: Rindge (1966), McGuffin (1977)<br>L: McGuffin (1977), Ives and Wong (1988) C: CNC, BCSC, NFRC | Jul – Aug | – | – | G |
| 1452 | * | R | *Iridopsis humaria* (Guenée, [1858])<br>T: Rindge (1966), McGuffin (1977)<br>L: Rindge (1966), McGuffin (1977), Ives and Wong (1988) C: CNC | Jun | – | B | – |
| 1453 | * | R | *Iridopsis larvaria* (Guenée, [1858])<br>T: McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), McGuffin (1977), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jun – E Jul | m | B | – |
| 1454 | | R | *Anavitrinella pampinaria* (Guenée, [1858])<br>T: McGuffin (1977)<br>L: Bowman (1951), McGuffin (1977), Ives and Wong (1988) C: CNC, UASM | Jun | m | B | – |
| 1455 | * | R H | *Ectropis crepuscularia* ([Denis and Schiffermüller], 1775) | L Apr – L May | m | B | g |

T: McGuffin (1977), Skou (1986)
L: Bowman (1951), Prentice (1963), McGuffin (1977), Ives and Wong (1988), Pohl et al. (2004b)
C: CNC, NFRC, OLDS, UASM

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1456 | | R | *Protoboarmia porcelaria* (Guenée, [1858])<br>T: McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), McGuffin (1977), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – M Jul | m | B | g |

**Melanolophiini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1457 | | R | *Melanolophia imitata* (Walker, 1860)<br>T: Rindge (1964), McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), McGuffin (1977) C: CNC | May | M | – | – |
| 1457.1 | * | P | *Melanolophia signataria* (Walker, 1860)<br>T: Rindge (1964), McGuffin (1977) | Jun? | – | B | – |
| 1458 | * | R | *Eufidonia convergaria* (Walker, 1860)<br>T: McGuffin (1977)<br>L: [Bowman (1951)], [Prentice (1963)], McGuffin (1977) C: CNC, NFRC, OLDS, UASM | Jun | m | B | – |
| 1459 | | R | *Eufidonia discospilata* (Walker, 1862)<br>T: McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), McGuffin (1977) C: CNC, NFRC, UASM | Jun | m | B | – |

**Bistonini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1460 | * | R H | *Biston betularia* (Linnaeus, 1758)<br>T: Rindge (1975), McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), Rindge (1975), McGuffin (1977), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | m | B | g |
| 1461 | | R | *Lycia ursaria* (Walker, 1860)<br>T: Rindge (1975), McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), Rindge (1975), McGuffin (1977), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Apr – L May | m | B | g |
| 1462 | | R | *Lycia rachelae* (Hulst, 1896)<br>T: Rindge (1975), McGuffin (1977) | Apr | m | B | g |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Prentice (1963), Rindge (1975), McGuffin (1977), Ives and Wong (1988) C: CNC, NFRC, UASM | | | | | |
| 1463 | | R | *Hypagyrtis unipunctata* (Haworth, 1809)<br>T: McGuffin (1977)<br>L: Bowman (1951), McGuffin (1977) C: CNC, NFRC, OLDS, UASM | Jul | | m | B | g |
| 1464 | | R | *Hypagyrtis piniata* (Packard, 1870)<br>T: McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), McGuffin (1977) C: CNC, NFRC, UASM | Jul | | m | B | – |
| 1465 | * | R | *Phigalia titea* (Cramer, [1780])<br>T: Rindge (1975), McGuffin (1977)<br>L: None C: UASM | E Apr – M May | | – | – | G |
| 1466 | | R | *Paleacrita vernata* (Peck, 1795)<br>T: Rindge (1975), McGuffin (1977)<br>L: Bowman (1951), McGuffin (1977), Hiratsuka et al. (1995) C: CNC, NFRC, UASM | Apr – May | | – | b | G |
| 1467 | * | R | *Erannis tiliaria* (Harris, 1841)<br>Linden Looper<br>T: Rindge (1975), McGuffin (1977)<br>L: Bowman (1951), Prentice (1963), Rindge (1975), McGuffin (1977), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Sep – L Oct | | M | B | g |
| **Baptini** | | | | | | | | |
| 1468 | * | R | *Lomographa semiclarata* (Walker, 1866)<br>T: Rindge (1979), McGuffin (1981)<br>L: Bowman (1951), Rindge (1979), McGuffin (1981), Ives and Wong (1988) C: CNC, NFRC, OLDS, PMAE, UASM | May | | m | B | g |
| 1469 | * | R | *Lomographa vestaliata* (Guenée, [1858])<br>T: Rindge (1979), McGuffin (1981)<br>L: Prentice (1963), Rindge (1979), McGuffin (1981) C: CNC | Jun | | M | – | – |
| **Caberini** | | | | | | | | |
| 1470 | | R | *Sericosema juturnaria* (Guenée, [1858])<br>T: Rindge (1950), McGuffin (1981)<br>L: Bowman (1951) C: UASM | E Aug | | M | – | – |
| 1471 | * | R H | *Cabera exanthemata* (Scopoli, 1763)<br>T: Rindge (1956b), McGuffin (1981), Skou (1986) | M Jun – L Jul | | M | – | g |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Rindge (1956b), McGuffin (1958a, 1981), Prentice (1963) C: CNC, UASM | | | | |
| 1472 | | R | *Cabera erythemaria* Guenée, [1858]<br>T: Rindge (1956b), McGuffin (1981)<br>L: Bowman (1951), Rindge (1956b), McGuffin (1958a, 1981), Prentice (1963), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Jun; L Aug – M Sep (2Br) | m | B | g |
| 1473 | | R | *Cabera variolaria* Guenée, [1858]<br>T: Rindge (1956b), McGuffin (1981)<br>L: Bowman (1951), Rindge (1956b), McGuffin (1958a, 1981), Prentice (1963), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jun – E Jul | m | B | g |
| 1474 | * | R | *Cabera borealis* (Hulst, 1896)<br>T: Rindge (1956b), McGuffin (1981)<br>L: Bowman (1951), Rindge (1956b), McGuffin (1958a, 1981) C: CNC, NFRC, UASM | Jun | m | B | – |
| 1475 | | R | *Drepanulatrix unicalcararia* (Guenée, [1858])<br>T: Rindge (1949), McGuffin (1981)<br>L: Bowman (1951) C: CNC | Aug | M | – | g |
| 1476 | * | R | *Drepanulatrix carnearia* (Hulst, 1888)<br>T: Rindge (1949), McGuffin (1981)<br>L: None C: UASM | Jul | M | – | – |
| 1477 | * | R | *Drepanulatrix falcataria* (Packard, 1873)<br>T: Rindge (1949), McGuffin (1981)<br>L: Bowman (1951), McGuffin (1981) C: CNC | May | M | – | – |
| 1478 | | R | *Apodrepanulatrix litaria* (Hulst, 1887)<br>T: Rindge (1949), McGuffin (1981)<br>L: Bowman (1951) C: UASM | L Aug | M | – | – |
| 1479 | * | R | *Ixala desperaria* (Hulst, 1887)<br>T: Rindge (1949), McGuffin (1981)<br>L: None C: UASM | May | M | – | – |
| **Angeronini** | | | | | | | |
| 1480 | * | R | *Aspitates aberrata* (Edwards, 1884)<br>T: Munroe (1963), McGuffin (1981)<br>L: Bowman (1951), Munroe (1963), McGuffin (1981) C: CNC, OLDS, PMAE, UASM | M May – M Jun | – | – | G |
| 1481 | * | R | *Aspitates taylori* (Butler, 1893)<br>T: Munroe (1963), McGuffin (1981)<br>L: None C: CNC, UASM | M Jun – L Jun | – | B | – |
| 1482 | * | R | *Euchlaena obtusaria* (Hübner, 1813) | L Jun – L Jul | – | b | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | T: McGuffin (1981) L: Bowman (1951), McGuffin (1981), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | | | | |
| 1483 | | R | *Euchlaena johnsonaria* (Fitch, 1869) T: McGuffin (1981) L: Bowman (1951), McGuffin (1981) C: CNC, OLDS, PMAE, UASM | L Jun – L Jul | m | B | g |
| 1484 | * | R | *Euchlaena madusaria* (Walker, 1860) T: McGuffin (1981) L: Bowman (1951), Prentice (1963), McGuffin (1981) C: CNC, NFRC, OLDS, UASM | L Jun – L Jul | m | B | g |
| 1485 | * | R | *Euchlaena marginaria* (Minot, 1869) T: McGuffin (1981) L: Bowman (1951), Prentice (1963), McGuffin (1981), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Jun | m | B | – |
| 1486 | | R | *Euchlaena tigrinaria* (Guenée, [1858]) T: McGuffin (1981) L: Bowman (1951), McGuffin (1981), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – L Jul | m | B | g |
| 1486.1 | * | P | *Euchlaena irraria* (Barnes and McDunnough, 1917) T: McGuffin (1981) | Jul? | – | – | G |
| 1487 | | R | *Xanthotype urticaria* Swett, 1918 T: Rindge (1978), McGuffin (1981) L: Bowman (1951), Rindge (1978), McGuffin (1981) C: CNC, OLDS, PMAE, UASM | L Jun – L Jul | – | B | g |
| 1488 | | R | *Xanthotype sospeta* (Drury, 1773) T: Rindge (1978), McGuffin (1981) L: Bowman (1951), Rindge (1978), McGuffin (1981), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – L Jul | m | B | g |
| **Azelini** | | | | | | | |
| 1489 | * | R | *Pero honestaria* (Walker, 1860) T: McGuffin (1987), Poole (1987) L: Bowman (1951), McGuffin (1987), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, UASM | L May – L Jun | m | B | g |
| 1490 | | R | *Pero morrisonaria* (Edwards, 1881) T: McGuffin (1987), Poole (1987) L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988) C: CNC, NFRC, OLDS, UASM | E Jun – M Jul | m | B | g |
| 1490.1 | * | P | *Pero mizon* Rindge, 1955 | Jul? | M | – | – |

T: McGuffin (1987), Poole (1987)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1491 | | R | *Pero behrensaria* (Packard, 1871)<br>T: McGuffin (1987), Poole (1987)<br>L: Bowman (1951), Rindge (1955), Prentice (1963), McGuffin (1987) C: CNC, NFRC | Jun | M | – | – |
| 1492 | | R | *Pero occidentalis* (Hulst, 1896)<br>T: McGuffin (1987), Poole (1987)<br>L: Bowman (1951), Rindge (1955), McGuffin (1987) C: CNC, NFRC, OLDS, UASM | L May – L Jun | M | – | – |
| **Nacophorini** | | | | | | | |
| 1493 | * | R | *Phaeoura quernaria* (Smith, 1797)<br>T: McGuffin (1981)<br>L: None C: UASM | M Jul | – | b | g |
| 1493.1 | * | P | *Gabriola dyari* Taylor, 1904<br>T: Rindge (1974a), McGuffin (1981) | L Jul? | M | – | – |
| 1493.2 | * | P | *Animomyia hardwicki* Rindge, 1974<br>T: Rindge (1974b) | M Aug | – | – | G |
| **Campaeini** | | | | | | | |
| 1494 | | R | *Campaea perlata* (Guenée, [1858])<br>T: McGuffin (1981)<br>L: Bowman (1951), Prentice (1963), McGuffin (1981), Ives and Wong (1988), Pohl et al. (2004b)<br>C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – M Aug | m | B | g |
| **Ennomini** | | | | | | | |
| 1495 | | R | *Ennomos magnaria* Guenée, [1858]<br>T: McGuffin (1981)<br>L: Bowman (1951), Prentice (1963), McGuffin (1981), Ives and Wong (1988), Pohl et al. (2004b)<br>C: CNC, NFRC, OLDS, PMAE, UASM | L Aug – L Sep | m | B | g |
| 1496 | * | R | *Ennomos subsignaria* (Hübner, 1823)<br>T: McGuffin (1987)<br>L: Bowman (1951) C: UASM | L May – L Jun | – | – | G |
| **Epirranthini** | | | | | | | |
| 1497 | * | R | *Spodolepis substriataria* Hulst, 1896<br>T: McGuffin (1981)<br>L: Bowman (1951), McGuffin (1981) C: CNC, NFRC, OLDS, PMAE, UASM | L Apr – M May | – | B | – |
| 1498 | * | R | *Spodolepis danbyi* (Hulst, 1898)<br>T: McGuffin (1981) | L Apr – M May | m | – | – |

L: Bowman (1951), Prentice (1963), McGuffin (1981) C: CNC, NFRC, OLDS, UASM

**Lithinini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1499 | * | U | *Tacparia detersata* (Guenée, [1858])<br>T: Ferguson (1973), McGuffin (1987)<br>L: Ferguson (1973), McGuffin (1987) C: AMNH? | Jun? | – | B? | – |
| 1500 | * | R | *Thallophaga hyperborea* (Hulst, 1900)<br>T: McGuffin (1987)<br>L: None C: UASM | M Jul | M | – | – |

**Anagogini**

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|---|---|---|---|---|---|---|---|
| 1501 | | R | *Selenia alciphearia* Walker, 1860<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M May – E Jun | m | B | – |
| 1502 | | R | *Selenia kentaria* (Grote and Robinson, 1867)<br>T: McGuffin (1987)<br>L: Bowman (1951) C: CNC, NFRC, UASM | M May – E Jun | – | b | g |
| 1503 | | R | *Metanema inatomaria* Guenée, [1858]<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – M Jul | m | B | g |
| 1504 | | R | *Metanema determinata* Walker, 1866<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | m | B | g |
| 1505 | * | R | *Metarranthis warneri* (Harvey, 1874)<br>T: McGuffin (1987)<br>L: Bowman (1951) C: CNC, OLDS, UASM | L May – M Jun | – | B | g |
| 1506 | | R | *Metarranthis duaria* (Guenée, [1858])<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988) C: NFRC, OLDS, PMAE, UASM | L May – M Jun | m | B | – |
| 1506.1 | * | P | *Metarranthis hypocharia* (Herrich-Schäffer, 1854)<br>T: McGuffin (1987) | E Jun? | – | B | – |
| 1507 | * | R | *Probole alienaria* (Herrich-Schäffer, [1855])<br>T: McGuffin (1987) | E – L Jun | m | B | g |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: Ives and Wong (1988) C: CNC, NFRC, UASM | | | | |
| 1508 | * | R | *Probole amicaria* (Herrich-Schäffer, [1855])<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988) C: CNC, NFRC, OLDS, PMAE, UASM | E – L Jun | m | B | g |
| 1509 | * | R H | *Plagodis pulveraria* (Linnaeus, 1758)<br>T: Skou (1986), McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M May – M Jun | m | B | g |
| 1509.1 | * | P | *Plagodis serinaria* Herrich-Schäffer, [1855]<br>T: McGuffin (1987) | May – Jun? | – | B | – |
| 1510 | | R | *Plagodis phlogosaria* (Guenée, [1858])<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M May – M Jun | m | B | g |
| 1511 | | R | *Plagodis alcoolaria* (Guenée, [1858])<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jun – L Jun | – | B | g |

**Ourapterygini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1512 | | R | *Neoterpes trianguliferata* (Packard, 1871)<br>T: McGuffin (1987)<br>L: Bowman (1951), McGuffin (1987) C: CNC, NFRC, PMAE, UASM | M Jun – E Jul | M | b | – |
| 1513 | | R | *Caripeta divisata* Walker, 1863<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jun – L Jul | m | B | – |
| 1514 | | R | *Caripeta aequaliaria* Grote, 1883<br>T: McGuffin (1987)<br>L: Prentice (1963), McGuffin (1987) C: CNC, NFRC | Jun – Aug | M | – | – |
| 1515 | | R | *Caripeta angustiorata* Walker, 1863<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987) C: CNC, NFRC, OLDS, UASM | L Jun – M Jul | m | B | – |
| 1516 | * | R | *Meris patula* Rindge, 1981 | L Jul – E Aug? | – | – | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | T: Rindge (1981), McGuffin (1987)<br>L: Rindge (1981), McGuffin (1987) C: CNC | | | | | |
| 1517 | * | R | *Besma quercivoraria* (Guenée, [1858])<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, UASM | E – L Jun | – | B | – |
| 1518 | * | R | *Lambdina fiscellaria* (Guenée, [1858])<br>Western Hemlock Looper<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Sep – M Oct | m | B | g |
| 1519 | | R | *Cingilia catenaria* (Drury, 1773)<br>T: McGuffin (1987)<br>L: Bowman (1951), McGuffin (1987) C: CNC, NFRC, UASM | Sep | – | B | – |
| 1520 | | R | *Nepytia canosaria* (Walker, 1863)<br>T: McGuffin (1987)<br>L: Schmidt and Pohl (2000) C: UASM | L Aug | – | B | – |
| 1521 | * | R | *Nepytia freemani* Munroe, 1963<br>T: McGuffin (1987)<br>L: Ives and Wong (1988) C: CNC | E Aug – Oct | M | – | – |
| 1522 | | R | *Sicya macularia* (Harris, 1850)<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jul – M Aug | m | B | – |
| 1523 | | R | *Plataea trilinearia* (Packard, 1873)<br>T: Rindge (1976), McGuffin (1987)<br>L: Bowman (1951), Rindge (1976), McGuffin (1987) C: CNC, OLDS, UASM | Jun | – | – | G |
| 1524 | * | R | *Tetracis jubararia* Hulst, 1886<br>T: McGuffin (1987), Ferris and Schmidt (2010)<br>L: Bowman (1951), McGuffin (1987), Ives and Wong (1988), Ferris and Schmidt (2010) C: CNC, NFRC, OLDS, UASM | Sep | m | B | g |
| 1525 | * | R | *Tetracis pallulata* Hulst, 1887<br>T: McGuffin (1987), Ferris and Schmidt (2010)<br>L: None C: UASM | Sep | M | - | - |
| 1526 | * | R | *Tetracis cervinaria* (Packard, 1871)<br>T: McGuffin (1987), Ferris and Schmidt (2010)<br>L: Ferris and Schmidt (2010) C: CNC | Aug | M | – | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1527 | * | R | *Tetracis formosa* (Hulst, 1896)<br>T: McGuffin (1987), Ferris and Schmidt (2010)<br>L: Ferris and Schmidt (2010) C: UASM | Sep | – | – | G |
| 1528 | | R | *Tetracis crocallata* Guenée, [1858]<br>T: McGuffin (1987), Ferris and Schmidt (2010)<br>L: Bowman (1951), McGuffin (1987), Ferris and Schmidt (2010) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – E Jul | – | B | – |
| 1529 | | R | *Tetracis cachexiata* Guenée, [1858]<br>T: McGuffin (1987), Ferris and Schmidt (2010)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ferris and Schmidt (2010) C: CNC, OLDS, UASM | Jun | m | B | g |
| 1529.1 | * | P | *Eutrapela clemataria* (Smith, 1797)<br>T: McGuffin (1987) | Jun? | – | B | – |
| 1530 | * | R | *Prochoerodes forficaria* (Guenée, [1858])<br>T: McGuffin (1987)<br>L: None C: CNC, UASM | Aug | M | – | – |
| 1531 | * | R | *Prochoerodes lineola* (Göze, 1781)<br>T: McGuffin (1987)<br>L: Bowman (1951), Prentice (1963), McGuffin (1987), Ives and Wong (1988) C: CNC, NFRC, OLDS, PMAE, UASM | M Aug – M Sep | – | B | g |
| 1532 | | R | *Enypia venata* (Grote, 1883)<br>T: Evans (1960), McGuffin (1987)<br>L: Evans (1960), McGuffin (1987) C: CNC | Jul – Aug | M | – | – |
| 1533 | | R | *Enypia griseata* Grossbeck, 1908<br>T: Evans (1960), McGuffin (1987)<br>L: Bowman (1951), Evans (1960), Prentice (1963), McGuffin (1987) C: CNC, NFRC, OLDS, UASM | L Jul – M Aug | M | – | – |

## Lasiocampoidea

### *56. Lasiocampidae – tent caterpillars and lappet moths*

Robust, medium-sized to very large (25–120 mm wingspan) moths, often drably colored and with reduced or simplified wing patterns. Males generally have conspicuously plumose antennae. Larval hosts are primarily trees and shrubs. The most familiar and biologically best-known North American lasiocampids are undoubtedly the tent caterpillars (*Malacosoma* spp.), as a result of the huge numbers of caterpillars present during periodic outbreaks. The vast body of literature on *Malacosoma* ecology and biology is testament to this; for an excellent introduction to tent caterpillar ecology see Fitzgerald (1995).

The family Lasiocampidae includes about 1500 species distributed worldwide (Lemaire and Minet 1999), with about 30 species in North America and five reported

from AB. They are most diverse in the tropics. Franclemont (1973) provided a diagnosis of the North American species. The taxonomy of the New World *Malacosoma* was revised by Stehr and Cook (1968). Despite their notoriety, a number of significant taxonomic uncertainties remain among the western taxa, and there is perhaps no better place than AB to investigate this; for example, see the notes on *Malacosoma californica*.

**Macromphaliinae**

1534 * R *Tolype dayi* Blackmore, 1921 — L Aug — M – –
T: Franclemont (1973)
L: None C: CNC, UASM

1535 * U *Tolype laricis* Fitch, 1856 — L Jul – M Sep — – B –
T: Franclemont (1973)
L: Prentice (1963), ?Franclemont (1973), Ives and Wong (1988) C: Unknown

**Lasiocampinae**

**Gastropachini**

1536 R *Phyllodesma americana* (Harris, 1841) — L May – L Jun — m B g
Lappet Moth
T: Franclemont (1973)
L: Bowman (1951), Prentice (1963), Franclemont (1973), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

**Lasiocampini**

1537 * R *Malacosoma disstria* (Hübner, 1820) — M Jul – E Aug — m B –
Forest Tent Caterpillar
T: Stehr and Cook (1968), Franclemont (1973)
L: Bowman (1951), Prentice (1963), Stehr and Cook (1968), Franclemont (1973), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

1538 * R *Malacosoma californica* (Packard, 1864) — M Jul – E Aug — M B g
Western Tent Caterpillar
T: Stehr and Cook (1968), Franclemont (1973)
L: Bowman (1951), Prentice (1963), Stehr and Cook (1968), Franclemont (1973) C: CNC, NFRC, OLDS, PMAE, UASM

## Bombycoidea

### *57. Saturniidae – giant silk moths*

Large (up to 280 mm wingspan) moths exhibiting rich colors and often beautiful patterns. For anyone even remotely familiar with Lepidoptera, this family needs little in the way of introduction. Adult saturniids have thick, often densely hairy bodies, small heads, and vestigial mouthparts, and do not feed. Larvae usually bear scoli (spiny warts), and some (including *Hemileuca*) can cause skin irritation. Larvae feed primarily on the foliage of trees and shrubs, particularly deciduous families—hence, the diversity seen in eastern North American saturniids is lacking in the northern boreal forests and the primarily coniferous forests in the west. Larvae construct robust cocoons before pupation; empty *Hyalophora* cocoons can persist for several seasons attached to stems of the host shrubs.

About half of the world's 1 200 saturniid species reside in the New World tropics, with about 70 species in Canada and the United States (Tuskes et al. 1996). Six species have been collected in AB, with a possible seventh species (*Actias luna*) yet to be confirmed in the boreal forest of eastern AB. Three of these species belong to the subfamily Hemileucinae, and have strictly diurnal adults. The remaining three species are in the subfamily Saturniinae, a group of large, broad-winged nocturnal moths that includes some of the world's largest insects. Monographs of the North American saturniid fauna include those by Ferguson (1971, 1972a) and Lemaire (1971–1974, 1978, 1988). Tuskes et al. (1996) provided an excellent overview of the biology, distribution and identification of the Saturniidae of the United States and Canada.

**Hemileucinae**

**Hemileucini**

1539 * R *Hemileuca nevadensis* Stretch, 1872 — E Sep — – b g
Nevada Buck Moth
T: Ferguson (1971), Tuskes et al. (1996)
L: None C: CNC, NFRC, UASM

1540 * R *Hemileuca hera* (Harris, 1841) — Aug — – – G
T: Ferguson (1971), Tuskes et al. (1996)
L: Tuskes et al. (1996) C: CNC, UASM

1541 * R *Hemileuca eglanterina* (Boisduval, 1852) — M Jun – M Jul — M – –
T: Ferguson (1971), Tuskes et al. (1996)
L: Bowman (1951), Ferguson (1971), Tuskes et al. (1996) C: CNC, NFRC, UASM

**Saturniinae**

**Saturniini**

1542 R *Antheraea polyphemus* (Cramer, 1776) — M Jun – L Jun — – B g
Polyphemus Moth
T: Ferguson (1972a), Tuskes et al. (1996)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), McGugan (1958), Ferguson (1972a), Tuskes et al. (1996) C: CNC, NFRC, OLDS, PMAE, UASM | | | | | |
| 1542.1 | * | P | *Actias luna* (Linnaeus, 1758)<br>Luna Moth<br>T: Ferguson (1972a), Tuskes et al. (1996) | L Jun – M Jul? | – | B | – | |
| **Attacini** | | | | | | | | |
| 1543 | * | R | *Hyalophora cecropia* (Linnaeus, 1758)<br>Cecropia Moth<br>T: Ferguson (1972a), Tuskes et al. (1996)<br>L: Bowman (1951), McGugan (1958), Ferguson (1972a), Hiratsuka et al. (1995), Tuskes et al. (1996) C: CNC, NFRC, PMAE, UASM | M Jun – E Jul | – | b | G | |
| 1544 | * | R | *Hyalophora gloveri* (Strecker, 1872)<br>Glover's Silk Moth<br>T: Ferguson (1972a), Collins (1997), Tuskes et al. (1996)<br>L: Bowman (1951), McGugan (1958), Ferguson (1972a), Tuskes et al. (1996) C: CNC, NFRC, OLDS, PMAE, UASM | L May – M Jun | m | B | G | |

### *58. Sphingidae – sphinx moths; hawk moths*

Medium-sized to very large (30–180 mm wingspan) moths with robust bodies, a characteristic elongate–triangular forewing, and a relatively small hindwing. Like the Saturniidae, the sphinx moths are part of the "charismatic megafauna" of Lepidoptera and indeed of all insects. Larvae often attract attention because they are large, and most species bear a conspicuous horn on the dorsal tip of the abdomen. Larval host plants include a wide variety of plant groups, although many of the species listed here feed on deciduous trees and shrubs.

There are at least 1 200 species of sphingids globally, and the family is most diverse in tropical regions (Lemaire and Minet 1999). The North American fauna consists of about 130 species, with 27 species reported from AB. Many sphingids are strong dispersers, and strays from the far south occur occasionally in southern Canada.

Three important monographs cover the North American Sphingidae: Rothschild and Jordan (1903), Hodges (1971), and Tuttle (2007). Rothschild and Jordan's (1903) monumental work encompassed a global revision of the family. Hodges (1971) provided a taxonomic framework and biological information, although the distributions in western Canada were sketchy. Tuttle (2007) provided a wealth of biological information with much better coverage of western Canada. Kitching and Cadiou (2000) provided a complete catalogue of the world Sphingidae.

**Sphinginae**

**Sphingini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1544.1 | * | P | *Manduca quinquemaculata* (Haworth, 1803)<br>Tomato Hornworm<br>T: Hodges (1971), Tuttle (2007) | Jun? | – | – | g |
| 1545 | * | R | *Ceratomia amyntor* (Geyer, 1835)<br>Elm Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Tuttle (2007) C: UASM | E Jun | – | – | G |
| 1546 | | R | *Ceratomia undulosa* (Walker, 1856)<br>Waved Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: McGugan (1958), Hodges (1971), Tuttle (2007)<br>C: CNC, OLDS, PMAE, UASM | E – L Jun | – | B | g |
| 1547 | | R | *Sphinx chersis* (Hübner, 1823)<br>Great Ash Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), ?Hodges (1971), Tuttle (2007)<br>C: CNC, NFRC, OLDS, PMAE, UASM | Jun | – | – | G |
| 1548 | | R | *Sphinx vashti* Strecker, 1878<br>Vashti Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), Hodges (1971), Tuttle (2007) C: CNC, NFRC, OLDS, PMAE, UASM | L May – L Jun | m | b | G |
| 1548.1 | * | P | *Sphinx perelegans* Edwards, 1874<br>T: Hodges (1971), Tuttle (2007) | L May – L Jun? | M | – | – |
| 1548.2 | * | P | *Sphinx gordius* Cramer, 1780<br>Apple Sphinx<br>T: Hodges (1971), Riotte (1980), Tuttle (2007) | E – L Jun? | – | b | G |
| 1549 | * | R | *Sphinx poecila* Stephens, 1828<br>T: Hodges (1971), Riotte (1980), Tuttle (2007)<br>L: [Bowman (1951)], [McGugan 1958)], [Hodges (1971)], Tuttle (2007) C: CNC, UASM | E – L Jun | m | B | – |
| 1550 | | R | *Sphinx luscitiosa* Clemens, 1859<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), McGugan (1958), Hodges (1971), Tuttle (2007) C: CNC, NFRC, UASM | Jun | – | b | g |
| 1551 | | R | *Sphinx drupiferarum* Smith, 1797<br>Wild Cherry Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), ?Hodges (1971), Tuttle (2007)<br>C: UASM | L May – L Jun | – | b | g |
| 1552 | * | R | *Lapara bombycoides* Walker, 1856<br>Northern Pine Sphinx<br>T: Hodges (1971), Riotte (1972), Tuttle (2007) | M Jul | – | B | – |

L: Schmidt and Pohl (2000), Tuttle (2007) C: UASM

**Smerinthinae**

**Smerinthini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1553 | | R | *Smerinthus jamaicensis* (Drury, 1773)<br>Twin-spotted Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), McGugan (1958), Hodges (1971), Tuttle (2007) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Jul | m | B | g |
| 1554 | * | R | *Smerinthus cerisyi* Kirby, 1837<br>One-eyed Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), McGugan (1958), ?Hodges (1971), Pohl et al. (2004b), Tuttle (2007) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – L Jul | m | B | g |
| 1555 | * | R | *Smerinthus ophthalmica* Boisduval, 1855<br>L: Dod (1912) C: CNC, NFRC, PMAE, UASM | Jun; Aug (2Br) | m | – | G |
| 1556 | | R | *Paonias excaecatus* (Smith, 1797)<br>Blinded Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), Hodges (1971), Tuttle (2007) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – M Jul | – | B | – |
| 1557 | | R | *Paonias myops* (Smith, 1797)<br>Small-eyed Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), ?Hodges (1971), Tuttle (2007) C: CNC, OLDS, PMAE, UASM | L May – L Jun | – | B | g |
| 1558 | * | R | *Pachysphinx modesta* (Harris, 1839)<br>Big Poplar Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), McGugan (1958), Hodges (1971), Tuttle (2007) C: CNC, NFRC, OLDS, UASM | L Jun – M Jul | – | B | g |
| 1559 | * | R | *Pachysphinx occidentalis* (Edwards, 1875)<br>Western Poplar Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: [Bowman (1951)], Tuttle (2007) C: PMAE, UASM | Jun; Aug (2Br) | m | – | G |

**Macroglossinae**

**Dilophonotini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1560 | | R | *Hemaris thysbe* (Fabricius, 1775)<br>Hummingbird Moth | L May – M Jun | m | B | g |

T: Hodges (1971), Tuttle (2007)
L: Bowman (1951), ?Hodges (1971), Tuttle (2007)
C: CNC, NFRC, OLDS, PMAE, UASM

1561 * R *Hemaris gracilis* (Grote and Robinson, 1865) M Jun – B g
T: Hodges (1971), Tuttle (2007)
L: Schmidt and Pohl (2000), Tuttle (2007) C: CNC, UASM

1562 * R *Hemaris diffinis* (Boisduval, 1836) L May – M Jun m B G
Snowberry Clearwing
T: Hodges (1971), Tuttle (2007)
L: Bowman (1951), Hodges (1971) C: CNC, NFRC, OLDS, PMAE, UASM

1563 * R *Hemaris thetis* (Boisduval, 1855) L May – M Jun M b –
T: Hodges (1971), Tuttle (2007), Schmidt (2009a)
L: Tuttle (2007), Schmidt (2009a) C: CNC, PMAE, UASM

**Macroglossini**

1564 * S *Amphion floridensis* Clark, 1920 E Jun – – g
Nessus Sphinx
T: Hodges (1971), Tuttle (2007)
L: Bowman (1951), Hodges (1971), Tuttle (2007) C: UASM

1565 R *Proserpinus juanita* (Strecker, 1877) L May; Jul (2Br) – – G
T: Hodges (1971), Tuttle (2007)
L: Bowman (1951), Hodges (1971), Tuttle (2007) C: CNC, UASM

1566 * U *Proserpinus clarkiae* (Boisduval, 1852) Jun? M – –
T: Hodges (1971), Tuttle (2007)
L: Hodges (1971) C: Unknown

1567 R *Proserpinus flavofasciata* (Walker, 1856) Jun m B –
T: Hodges (1971), Tuttle (2007)
L: Bowman (1951), ?Hodges (1971), Tuttle (2007)
C: CNC, NFRC, UASM

1568 * R *Darapsa choerilus* (Cramer, 1780) L Jun – B –
Azalea Sphinx
T: Hodges (1971), Tuttle (2007)
L: ?Hodges (1971), Tuttle (2007) C: UASM

1569 * R I *Hyles euphorbiae* (Linnaeus, 1758) L Jun – E Jul; E Sep (2Br) – b G
Leafy Spurge Hawkmoth
T: Hodges (1971), Pittaway (1993), Tuttle (2007)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: ?Hodges (1971), Tuttle (2007) C: CNC, OLDS, UASM | | | | |
| 1570 | * | R H | *Hyles gallii* (Rottemburg, 1775)<br>Galium Sphinx<br>T: Hodges (1971), Pittaway (1993), Tuttle (2007)<br>L: Bowman (1951), ?Hodges (1971), Pohl et al. (2004b), Tuttle (2007) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | m | B | g |
| 1571 | * | M | *Hyles lineata* (Fabricius, 1775)<br>White-lined Sphinx<br>T: Hodges (1971), Tuttle (2007)<br>L: Bowman (1951), Tuttle (2007) C: CNC, NFRC, OLDS, PMAE, UASM | L May; Jul – E Sep (2Br) | m | B | g |

## Noctuoidea

### 59. Notodontidae – prominents

Generally medium-sized (30–60 mm wingspan) moths with relatively robust bodies, although the family is structurally and phenotypically diverse. The antennae are bipectinate in the males and simple or narrowly pectinate in the females. Larvae are equally diverse in structure and color; those of many genera have unique and bizarre postures and structures. Most notodontids feed on the foliage of woody deciduous plants.

There are approximately 2 800 described species of notodontids globally (Kitching and Rawlins 1999). The majority of the 140 North American species occur in eastern hardwood forests. Alberta, with 24 species, has relatively few notodontids. There are currently no comprehensive treatments of the North American Notodontidae, although higher-level systematics were treated by Miller (1991). The genus *Gluphisia* was revised by Franclemont (1941a). Forbes (1948) covered most of the species listed here, and Covell (1984) and Handfield (1999) illustrated most adults. Wagner (2005) and Ives and Wong (1988) included excellent images of larvae of some AB species. Schintlmeister (2008) provides a comprehensive treatment of the Palaearctic fauna, which includes a number of Asian and Eurasian species very similar to (and in some cases conspecific with) some of the North American species.

**Pygaerinae**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1572 | R H | *Clostera albosigma* Fitch, 1856<br>T: Forbes (1948), Schintlmeister (2008)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, OLDS, PMAE, UASM | L May – L Jun; L Jul – M Aug (2Br?) | m | B | g |
| 1573 | R | *Clostera strigosa* (Grote, 1882)<br>T: Forbes (1948)<br>L: Pohl et al. (2004b) C: CNC, NFRC, UASM | L May | – | B | g |
| 1574 | R | *Clostera brucei* (Edwards, 1885)<br>T: Forbes (1948) | L May – L Jun | M | B | – |

L: Bowman (1951), Prentice (1962) C: CNC, NFRC, OLDS, UASM

1575 R *Clostera apicalis* (Walker, 1855) L May – L Jun m B g
T: Forbes (1948)
L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

**Notodontinae**

**Notodontini**

1576 R H *Pheosia rimosa* Packard, 1864 M Jun – E Aug m B g
T: Forbes (1948), Schintlmeister (1983, 2008)
L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

1577 R *Odontosia elegans* (Strecker, 1885) L Jun – E Jul M B g
T: Forbes (1948)
L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM

1578 R *Notodonta scitipennis* Walker, 1862 Jul – B g
T: Forbes (1948)
L: Bowman (1951), Prentice (1962) C: CNC,NFRC, OLDS, PMAE, UASM

1579 * R H *Notodonta torva* (Hübner, 1803) L May – L Jun m B –
T: Forbes (1948), Schintlmeister (1983, 2008)
L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

**Dicranurini**

1580 * R H *Gluphisia septentrionis* Walker, 1855 L Jun – E Aug M B g
T: Franclemont (1941a), Forbes (1948), Schintlmeister (1983, 2008)
L: Bowman (1951), Prentice (1962), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

1581 R *Gluphisia avimacula* Hudson, 1891 M May – L May – B –
T: Franclemont (1941a), Forbes (1948)
L: Pohl et al. (2004b) C: NFRC, PMAE, UASM

1582 R *Gluphisia lintneri* (Grote, 1877) L Apr – M May – B g
T: Franclemont (1941a), Forbes (1948)
L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, UASM

1583 R *Gluphisia severa* Edwards, 1886 M May – M Jun M – –
T: Franclemont (1941a)
L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

1584 * R *Furcula cinerea* (Walker, 1865) E Jun – E Jul – b G

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | T: Forbes (1948) L: Bowman (1951) C: CNC, UASM | | | | |
| 1585 | * | R | *Furcula occidentalis* (Lintner, 1878) T: Forbes (1948) L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L May – L Jun | M | B | g |
| 1586 | * | R | *Furcula scolopendrina* (Boisduval, 1869) T: Forbes (1948) L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Jun | m | B | – |
| 1587 | | R | *Furcula modesta* (Hudson, 1891) T: Forbes (1948) L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L May – M Jun; L Jul – E Aug (2Br?) | m | B | – |
| 1588 | * | R | *Cerura scitiscripta* Riley, 1865 T: Forbes (1948) L: Bowman (1951) C: CNC | Jun? | – | B | – |
| **Phalerinae** | | | | | | | |
| 1588.1 | * | P | *Datana ministra* (Drury, 1773) T: Forbes (1948) | Jun? | – | b | G |
| 1589 | | R | *Nadata gibbosa* (Smith, 1797) T: Forbes (1948) L: Bowman (1951), Prentice (1962), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | m | B | g |
| **Heterocampinae** | | | | | | | |
| 1589.1 | * | P | *Heterocampa guttivitta* (Walker, 1855) T: Forbes (1948) | Jun? | – | B | – |
| 1590 | * | R | *Schizura ipomoeae* Doubleday, 1841 T: Forbes (1948) L: None C: BCSC, BIRD | Jun | – | b | g |
| 1591 | | R | *Schizura unicornis* (Smith, 1797) T: Forbes (1948) L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Jul | M | B | – |
| 1591.1 | * | P | *Schizura concinna* (Smith, 1797) T: Forbes (1948) | Jul? | M | – | G |
| 1592 | | R | *Schizura leptinoides* (Grote, 1864) T: Forbes (1948) | L Jun – E Aug | M | B | – |

L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM

1593 R *Oligocentria semirufescens* (Walker, 1865) M Jul – M Aug m B –
T: Forbes (1948)
L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

1594 * R *Oligocentria pallida* (Strecker, 1899) E Aug M – –
L: None C: UASM

**Nystaleinae**

1595 * R *Dasylophia anguina* (Smith, 1797) M Jun – M Aug – – G
T: Forbes (1948)
L: None C: CNC, UASM

## *Noctuidae* sensu lato *(Erebidae, Euteliidae, Nolidae, Noctuidae)* – *owlet moths and allies*

This is an extremely diverse group, and we are just beginning to get a more solid understanding of the evolutionary history of this complex assemblage; due to the changing nature of the higher level systematics, this group has recently been variously defined as a single family (Noctuidae in the sense of Lafontaine and Fibiger 2006) or numerous families (Mitchell et al. 2005b). The most recent phylogenetic analysis using an extensive molecular character set (Zahiri et al. in press) substantiates earlier findings, and more importantly shows that there are four well-supported family groups with other taxa subordinate within these. The family-level nomenclature and systematic order was adjusted accordingly for the North American Noctuoidea by Lafontaine and Schmidt (in press), and we use the same arrangement here. It is hoped that the resulting classification is more natural, more phylogenetically sound, and therefore more stable, although it has created some short-term confusion through the redefinition, renaming, and reorganization of some long-standing groups. As a result, the long-standing family-level groups Arctiidae and Lymantriidae have been relegated to subfamily status within the Erebidae, and a number of new subfamily names and groupings have appeared that will be unfamiliar to many.

This group contains approximately 58 500 described species in 4200 genera worldwide, and has traditionally been divided into a trifine group and a quadrifine group, on the basis of details of the hindwing venation (for details, see Lafontaine and Fibiger 2006). This corresponds largely to the Erebidae (quadrifines) and Noctuidae (trifines), although the trifine condition is thought to have arisen independently several times.

In the preceding sections dealing with the microlepidoptera and the non-noctuoid macromoths and butterflies, each group is discussed briefly at the family level, and the AB fauna are placed into context within the North American and global faunas. Similar treatment for all families and subfamilies of the noctuid groups is not possible at this time, because of the many recent rearrangements in the higher classification,

and because the global composition of many groups has not yet been reconciled with the new classification system.

Approximately 3 800 species of Noctuidae (in the broad sense) are known from North America north of Mexico; 768 species are reported here from AB. Besides coverage in the general Lepidoptera texts discussed in the introductory sections of this book, useful general works about the Noctuidae include those by Rockburn and Lafontaine (1976) and Rings et al. (1992). Larvae of the Noctuidae were treated by Crumb (1956).

### 60. Erebidae - quadrifine noctuoids

As currently defined, this is a very large assemblage of noctuoid moths, with an enormous diversity in size, facies, ecology and biology. Although relatively well-supported as a natural group by molecular and morphological data, the phylogeny within this group is still in its infancy – many relationships within the Erebidae are still poorly resolved, to say nothing of tropical groups that still await discovery and/or phylogenetic placement. There are however also several strongly supported groups now included within the Erebidae, such as the Lymantriinae, Arctiinae, and Herminiinae. The Erebidae as currently defined may well be split into a number of families in the future. It is difficult to draw generalizations on such a hyper-diverse group, and brief introductory sections are limited to subfamilies here. As it is currently constituted, Erebidae is represented by 124 species in AB.

#### 60.1. Lymantriinae – tussock moths

Mostly medium-sized (30–80 mm wingspan) moths with robust bodies. Wing pattern and color is usually drab, and several genera have wingless (*Orgyia*) or flightless (*Gynaephora*, some *Lymantria*) females. The subfamily Lymantriinae is thought to be closely related to the Arctiinae (both groups have hairy larvae), Aganainae and Herminiinae. Like the Arctiinae, the most recent systematic arrangement of the Noctuoidea places the Lymantriinae as a subfamily of the Erebidae rather than as a separate family (Lafontaine and Schmidt in press). Larvae are predominantly arboreal, feeding on both deciduous and coniferous woody plants. Many species are host generalists, and a relatively high proportion of this subfamily are forest pests, most notably the Gypsy Moth (*Lymantria dispar*), the Satin Moth (*Leucoma salicis*) and the Douglas-fir Tussock Moth (*Orgyia pseudotsugata*).

Approximately 2500 species of Lymantriinae are known worldwide, with diversity centered in the Old World tropics: only about 200 species are known from the New World. Thirty-two species occur in North America, nine of which are reported from AB. Ferguson (1978) treated all of the North American Lymantriinae.

**Lymantriini**

1596 * S I *Lymantria dispar* (Linnaeus, 1758) Jul – Aug – b –
Gypsy Moth
T: Ferguson (1978)
L: Brandt (1994), Hiratsuka et al. (1995) C: CNC, NFRC

**Orgyiini**

1597 * R I *Leucoma salicis* (Linnaeus, 1758) L Jul M B –
Satin Moth
T: Ferguson (1978)
L: Hiratsuka et al. (1995), Langor (1995) C: CNC, NFRC, OLDS, UASM

1598 * R *Gynaephora rossii* Curtis, 1835 Jul? – B –
T: Ferguson (1978)
L: Schmidt et al. (2004) C: UASM

1599 * U *Dasychira dorsipennata* (Barnes and Benjamin, 1919) Jun – – g
T: Ferguson (1978)
L: Bowman (1951) C: ?UASM

1600 * R *Dasychira vagans* (Barnes and Benjamin, 1913) E – L Jul M B g
T: Ferguson (1978)
L: Bowman (1951), Prentice (1962), Ferguson (1978), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

1601 * R *Dasychira plagiata* (Walker, 1865) E – L Jul – B –
T: Ferguson (1978)
L: Prentice (1962), ?Ferguson (1978), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

1602 * R *Dasychira grisefacta* (Dyar, 1911) E – L Jul M b –
T: Ferguson (1978)
L: Bowman (1951), Prentice (1962), Ferguson (1978) C: CNC, NFRC, OLDS, PMAE, UASM

1603 * R H *Orgyia antiqua* (Linnaeus, 1758) L Aug – M Sep M B –
Rusty Tussock Moth
T: Ferguson (1978)
L: Bowman (1951), Prentice (1962), Ives and Wong (1988) C: CNC, NFRC, OLDS, PMAE, UASM

1603.1 * P *Orgyia pseudotsugata* (McDunnough, 1921) E – L Aug M – –
Douglas-fir Tussock Moth
T: Ferguson (1978)

1604 * U *Orgyia leucostigma* (Smith, 1797) Aug M b g
Whitemarked Tussock Moth
T: Ferguson (1978)
L: Prentice (1962), Ferguson (1978), Ives and Wong (1988) C: Unknown

### *60.2. Arctiinae – tiger moths*

Mostly medium-sized moths but ranging in size (20 to 50 mm wingspan), usually with brightly colored, patterned wings. Many species are aposematically colored and possess

the ability to produce sound with a specialized structure (the tymbal), which is used to characterize the group. This large group has traditionally been treated as a family separate from the Noctuidae, but the most recent research shows that tiger moths are derived within a re-defined Erebidae, and the nomenclature has changed recently to reflect these findings (Lafontaine and Fibiger 2006; Lafontaine and Schmidt in press). The nomenclature used herein reflects the phylogenetic studies of Jacobson and Weller (2002), Bendib and Minet (1999), and DaCosta and Weller (2005), summarized in Schmidt and Opler (2008). Larvae are usually densely hairy and include the well-known woolly bears. Larvae are primarily generalist feeders on herbaceous plants (including grasses and sedges); a few groups feed on woody plants, and the Lithosiini specialize on lichens.

Worldwide, the Arctiinae include about 11 000 species, 6 000 of which occur in the New World tropics (Kitching and Rawlins 1999). Although most diverse in the tropics, a number of genera are restricted to arctic or temperate regions (e.g., *Acsala*, *Dodia*, *Arctia*, *Pararctia*). A checklist of North American species published by Ferguson and Opler (2006) was superseded by Schmidt and Opler (2008), which corrects errors and omissions of the former. Minor additional changes for the North American fauna were documented in Lafontaine and Schmidt (in press). Most genera are in need of revision, but a few modern works exist, for *Cisthene* (Knowlton 1967), *Dodia* (Tshistjakov and Lafontaine 1984), *Grammia* (Schmidt 2009b), *Phragmatobia* (Donahue and Newman 1966), and *Platarctia* and *Pararctia* (Sotavalta 1965). Schmidt and Opler (2008) reported 281 species of Arctiinae from North America north of Mexico; 49 species are reported herein from AB.

**Lithosiini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605 | * | R | *Lycomorpha pholus* (Drury, 1773)<br>T: Forbes (1960)<br>L: Ferguson et al. (2000) C: CNC | L Jul? | – | – | G |
| 1606 | | R | *Hypoprepia miniata* (Kirby, 1837)<br>T: Forbes (1960)<br>L: Bowman (1951), McGugan (1958) C: CNC, OLDS, PMAE, UASM | E – L Jul | M | B | g |
| 1607 | * | R | *Hypoprepia fucosa* (Hübner, [1831])<br>T: Forbes (1960)<br>L: None C: UASM | Jul – Aug | – | – | G |
| 1608 | | R | *Clemensia albata* Packard, 1864<br>T: Forbes (1960)<br>L: Bowman (1951), McGugan (1958), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – E Aug | m | B | – |
| 1609 | | R | *Eilema bicolor* (Grote, 1864)<br>T: Forbes (1960)<br>L: Bowman (1951), McGugan (1958), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – E Aug | M | B | g |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1610 | * | R | *Crambidia casta* (Packard, 1869)<br>T: Forbes (1960)<br>L: Bowman (1951) C: CNC, OLDS, PMAE, UASM | Aug | m | B | G |
| 1611 | * | R | *Crambidia cephalica* (Grote and Robinson, 1870)<br>L: Ferguson et al. (2000) C: BCSC, CNC, UASM | L Jul | – | – | G |
| **Arctiini** | | | | | | | |
| 1611.1 | * | P | *Virbia laeta* (Guérin-Méneville, 1844)<br>T: Forbes (1960), Zaspel and Weller (2006), Zaspel et al. (2008) | M Jul? | – | B | – |
| 1612 | * | R | *Virbia* sp. nr. *aurantiaca* (Hübner, [1831])<br>T: Forbes (1960), Cardé (1965), Zaspel and Weller (2006), Zaspel et al. (2008)<br>L: None C: CNC, UASM | Jul | – | B | – |
| 1613 | * | R | *Virbia ferruginosa* (Walker, 1854)<br>T: Cardé (1965), Zaspel and Weller (2006), Zaspel et al. (2008)<br>L: Bowman (1951), ?Zaspel et al. (2008) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – L Jul | M | B | g |
| 1614 | * | R | *Holoarctia sordida* (McDunnough, 1921)<br>T: Ferguson (1985b), Pöyry and Kullberg (1997)<br>L: Bowman (1951) C: CNC, UASM | M Jul – L Jul | M | – | – |
| 1615 | * | R | *Neoarctia beanii* (Neumoegen, 1891)<br>T: Ferguson (1985b)<br>L: Bowman (1951) C: CNC, NFRC, UASM | M Jul | M | – | – |
| 1616 | * | R | *Holarctia obliterata* (Stretch, 1885)<br>T: Ferguson (1991)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | Aug | M | B | g |
| 1617 | | R | *Grammia doris* (Boisduval, 1869)<br>T: Forbes (1960), Schmidt (2009b)<br>L: Bowman (1951), Schmidt (2009b) C: UASM | L Jun | – | B | g |
| 1618 | * | R | *Grammia phyllira* (Drury, 1773)<br>T: Forbes (1960), Schmidt (2009b)<br>L: Bowman (1951), Schmidt (2009b) C: CNC, UASM | L Jul | – | b | g |
| 1619 | | R | *Grammia virgo* (Linnaeus, 1758)<br>T: Forbes (1960), Schmidt (2009b)<br>L: Bowman (1951), Schmidt (2009b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – L Jul | m | B | g |
| 1620 | | R | *Grammia parthenice* (Kirby, 1837)<br>T: Forbes (1960), Schmidt (2009b)<br>L: Bowman (1951), Schmidt (2009b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – E Aug | m | B | g |
| 1621 | * | R | *Grammia virguncula* (Kirby, 1837) | M Jun – E Jul | m | B | g |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | T: Forbes (1960), Schmidt (2009b)<br>L: Bowman (1951), Schmidt (2009b) C: CNC, NFRC, OLDS, PMAE, UASM | | | | | |
| 1622 | * | R | *Grammia speciosa* (Möschler, 1864)<br>T: Schmidt (2009b)<br>L: Schmidt (2009b) C: CNC, UASM | Jul | – | B | – |
| 1622.1 | * | P | *Grammia quenseli* (Paykull, 1793)<br>T: Schmidt (2009b) | Jul | M | – | – |
| 1623 | * | R | *Grammia margo* Schmidt, 2009<br>T: Schmidt (2009b)<br>L: [Bowman (1951)], Schmidt (2009b) C: CNC, NFRC, UASM | L May | m | B | g |
| 1624 | * | R | *Grammia nevadensis* (Grote and Robinson, 1866)<br>T: Ferguson and Schmidt (2007), Schmidt (2009b)<br>L: Bowman (1951), Hooper (1988b), Schmidt (2009b) C: CNC, UASM | Jul – Aug | M | – | – |
| 1625 | | R | *Grammia williamsii* (Dodge, 1871)<br>T: Forbes (1960), Schmidt (2009b)<br>L: Bowman (1951), Schmidt (2009b) C: CNC, NFRC, OLDS, PMAE, UASM | E – L Jul | m | B | G |
| 1626 | | R | *Grammia elongata* (Stretch, 1885)<br>T: Schmidt (2009b)<br>L: Schmidt (2009b) C: CNC, UASM | Jul | M | – | – |
| 1627 | | R | *Grammia blakei* (Grote, 1865)<br>T: Schmidt (2009b)<br>L: Bowman (1951), Byers (1988), Schmidt (2009b) C: CNC, UASM | M May – E Jun | – | – | G |
| 1627.1 | * | P | *Grammia ornata* (Packard, 1864)<br>T: Ferguson et al. (2000), Schmidt (2009b) | Jun? | M | – | – |
| 1628 | | R | *Parasemia plantaginis* (Linnaeus, 1758)<br>T: Forbes (1960)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Jul | M | B | – |
| 1629 | * | R | *Pararctia lapponica* (Thunberg, 1791)<br>T: Sotavalta (1965)<br>L: None C: CNC, UASM | Jun – L Jul | M | – | – |
| 1630 | * | R | *Pararctia yarrowii* (Stretch, [1874])<br>T: Sotavalta (1965)<br>L: Bowman (1951) C: CNC, UASM | Jun – L Jul | M | b | – |
| 1631 | * | R | *Platarctia parthenos* (Harris, 1850)<br>T: Sotavalta (1965) | M Jun – E Jul | M | B | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), McGugan (1958), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | | | | | |
| 1631.1 | * | P | *Platyprepia virginalis* (Boisduval, 1852) T: Sotavalta (1965) | Jun? | M | – | – |
| 1632 | * | R H | *Arctia caja* (Linnaeus, 1758) T: Forbes (1960), de Freina and Witt (1987) L: Bowman (1951), Ives and Wong (1988) C: CNC, NFRC, OLDS, PMAE, UASM | L Jul – M Aug | M | B | – |
| 1632.1 | * | P | *Arctia opulenta* (Edwards, 1881) T: Lafontaine and Troubridge (1999) | Jul? | M | – | – |
| 1633 | * | R H | *Phragmatobia fuliginosa* (Linnaeus, 1758) T: Donahue and Newman (1966), de Freina and Witt (1987) L: Bowman (1951), ?Donahue and Newman (1966) C: CNC, UASM | May; E Aug (2Br) | m | b | G |
| 1634 | * | R | *Phragmatobia lineata* Newman and Donahue, 1966 T: Donahue and Newman (1966) L: Donahue and Newman (1966), Hooper (1988b), Donahue (1993) C: CNC, UASM | E – L May | – | – | G |
| 1635 | | R | *Phragmatobia assimilans* Walker, 1855 T: Donahue and Newman (1966) L: Bowman (1951), Donahue and Newman (1966), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M May – M Jun | m | B | g |
| 1635.1 | * | P | *Leptarctia californiae* (Walker, 1855) | ? | M | – | – |
| 1636 | | R | *Pyrrharctia isabella* (Smith, 1797) T: Forbes (1960) L: Bowman (1951) C: CNC, OLDS, UASM | M Jun – M Jul | – | B | G |
| 1637 | | R | *Estigmene acrea* (Drury, 1773) T: Forbes (1960) L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | – | B | G |
| 1638 | * | R | *Hyphantria cunea* (Drury, 1773) Fall Webworm T: Forbes (1960) L: Bowman (1951), McGugan (1958) C: CNC, NFRC, UASM | Jun | – | – | G |
| 1639 | | R | *Spilosoma congrua* Walker, 1855 T: Forbes (1960) L: None C: CNC, OLDS, UASM | Jun | – | B | – |
| 1640 | | R | *Spilosoma dubia* (Walker, 1855) T: Forbes (1960) L: Bowman (1951) C: CNC, OLDS, UASM | L May – M Jun | – | B | g |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1641 | | R | *Spilosoma virginica* (Fabricius, 1798)<br>T: Forbes (1960)<br>L: Bowman (1951), McGugan (1958) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | – | B | g |
| 1642 | | R | *Spilosoma vagans* (Boisduval, 1852)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M Jun – E Jul | M | – | – |
| 1642.1 | * | P | *Spilosoma pteridis* Edwards 1874 | M May – M Jun | – | – | G |
| 1643 | * | R | *Spilosoma danbyi* (Neumoegen and Dyar, 1893)<br>T: Forbes (1960)<br>L: [Bowman (1951)] C: CNC, NFRC, UASM | L May – M Jun | – | B | – |
| 1644 | * | R | *Hypercompe permaculata* (Packard, 1872)<br>L: Bowman (1951), Hooper (1988b) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – M Jul | – | – | G |
| 1645 | * | R H | *Dodia albertae* Dyar, 1901<br>T: Tshistjakov and Lafontaine (1984), Schmidt and Macaulay (2009)<br>L: Bowman (1951), Tshistjakov and Lafontaine (1984), Schmidt and Macaulay (2009) C: CNC, UASM | M Jun – E Jul | m | B | – |
| 1646 | * | R | *Dodia tarandus* Schmidt and Macaulay, 2009<br>T: Schmidt and Macaulay (2009)<br>L: Schmidt and Macaulay (2009) C: CNC, UASM | M Jun – E Jul | – | B | – |
| 1647 | * | R | *Haploa lecontei* (Guérin-Méneville, 1844)<br>T: Forbes (1960)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jul – E Aug | – | B | g |
| 1647.1 | * | P | *Haploa confusa* (Lyman, 1887)<br>T: Forbes (1960) | L Jul? | – | B | – |
| 1648 | * | R | *Gnophaela vermiculata* (Grote, 1864)<br>Police Car Moth<br>L: Bowman (1951), [Ives and Wong (1988)] C: CNC, OLDS, NFRC, PMAE, UASM | E Jul – E Aug | m | B | – |
| 1648.1 | * | P | *Halysidota tessellaris* (Smith, 1797)<br>T: Forbes (1960) | L Jun? | – | B | – |
| 1649 | | R | *Lophocampa maculata* Harris, 1841<br>T: Forbes (1960)<br>L: Bowman (1951), McGugan (1958), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | m | B | g |
| 1650 | * | R | *Cycnia tenera* Hübner, 1818<br>T: Forbes (1960)<br>L: None C: BCSC, J. H. Acorn collection | L Jun? – E Jul | – | – | G |
| 1651 | | R | *Cycnia oregonensis* (Stretch, [1874]) | L May – M Jun | – | – | G |

T: Forbes (1960)
L: Bowman (1951) C: CNC, UASM

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1652 | * | R | *Ctenucha virginica* (Esper, 1794)<br>T: Forbes (1960)<br>L: None C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – E Jul | m | B | – |
| 1653 | | R | *Cisseps fulvicollis* (Hübner, 1818)<br>T: Forbes (1960)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | L Jul – E Aug | M | B | – |

### *60.3. Herminiinae*

Small to medium-sized (20–40 mm wingspan) moths with relatively broad wings and narrow bodies. They are defined on the basis of several internal and tympanal structures. Many species have distinctive secondary male sexual organs occurring on almost any part of the body, including swellings on the antennae and hair brushes on the palps or legs. The larvae feed mainly on fungus on dead leaves in various states of decomposition, but diets range from fungus to living vascular plant material. A few species feed on other material including dead insects, dried fruit, and dung.

The Herminiinae occur worldwide, with the main diversity in the tropics. Approximately 100 species in 20 genera occur in North America. Sixteen species (including at least one undescribed) in nine genera occur in AB. The subfamily is need of revision. The only recent taxonomic work on the group is a revision of the genus *Macrochilo* (Ferguson 1982). Most AB species were treated by Forbes (1954).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1654 | * | R | *Idia americalis* (Guenée, 1854)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E May – L Sep | M | B | g |
| 1655 | * | R | *Idia aemula* (Hübner, 1814)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – L Aug | – | B | g |
| 1656 | * | R | *Idia* sp. nr. *aemula* (Hübner, 1814)<br>T: Rings et al. (1992)<br>L: Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Jun – M Aug | M | B | – |
| 1657 | * | R | *Idia lubricalis* (Geyer, 1832)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – E Sep | – | b | g |
| 1658 | * | R | *Idia occidentalis* (Smith, 1884)<br>T: Mustelin (2006) | E Aug – M Aug | – | – | G |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: None C: CNC, UASM | | | | | |
| 1659 | * | R | *Idia immaculalis* (Hulst, 1886)<br>L: Bowman (1951) C: CNC, UASM | E Jul – E Aug | – | – | G |
| 1660 | | R | *Phalaenophana pyramusalis* (Walker, 1859)<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, UASM | M May – M Jul | – | B | – |
| 1661 | * | R | *Zanclognatha pedipilalis* (Guenée, 1854)<br>T: Forbes (1954)<br>L: Hooper (1988c) C: CNC | E Sep | – | – | G |
| 1662 | | R | *Zanclognatha lutalba* (Smith, 1906)<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM | L Jun – E Aug | – | B | g |
| 1663 | | R | *Chytolita petrealis* (Grote, 1880)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L May – E Aug | M | B | g |
| 1664 | | R | *Macrochilo bivittata* (Grote, 1877)<br>T: Ferguson (1982)<br>L: None C: CNC, UASM | Jul – E Aug | – | B | g |
| 1665 | | R | *Macrochilo louisiana* (Forbes, 1922)<br>T: Ferguson (1982)<br>L: None C: CNC, UASM | M Jul – L Aug | – | B | – |
| 1665.1 | * | P | *Macrochilo absorptalis* (Walker, 1859)<br>T: Ferguson (1982) | ? | – | B | G |
| 1666 | | R | *Phalaenostola metonalis* (Walker, 1859)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | L Jun – E Aug | M | B | g |
| 1667 | | R | *Phalaenostola hanhami* (Smith, 1893)<br>T: Forbes (1954)<br>L: Pohl et al. (2004b) C: CNC, NFRC, UASM | L Jul – E Aug | – | B | – |
| 1667.1 | * | P | *Renia flavipunctalis* (Geyer, 1832)<br>T: Forbes (1954) | ? | – | – | G |
| 1668 | | R | *Bleptina caradrinalis* Guenée, 1854<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jun – M Jul | – | B | G |
| 1669 | | R | *Palthis angulalis* (Hübner, 1796)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L May – E Aug | M | B | g |

### *60.4. Pangraptinae*

A group of relatively small (20 – 30 mm wingspan) moths, with broad, slightly scalloped wings. Only recently recognized as a valid family-group (see summary in Lafontaine and Schmidt in press), Pangraptinae currently contains only two species in two genera in North America, with additional species in *Pangrapta* (likely representing multiple unrecognized genera) in the Old World tropics. Only *Pangrapta decoralis*, the type-species of the genus, occurs in AB.

1670 * R *Pangrapta decoralis* Hübner, 1818 L Jun – B –
T: Forbes (1954), Covell (1984)
L: None C: UASM

### *60.5. Rivulinae*

Small (15–20 mm wingspan), broad-winged nocturnal moths. The subfamily is defined mainly by larval characters, but adults also have unique microsculpturing of the proboscis. Although this group was included in the Hypeninae by Kitching and Rawlins (1999), Fibiger and Lafontaine (2005) placed the rivulines in their own subfamily, as they share no derived characters with the Hypeninae. Unlike many of the other primitive quadrifine groups, the larvae feed on living vascular plants.

There are relatively few Rivulinae species globally; a number of species in the genus *Rivula* are found worldwide. Nine species in three genera occur in North America, one of which occurs in AB. The group is in need of revision, but the sole AB species was treated by Forbes (1954) and Covell (1984).

1671 R *Rivula propinqualis* Guenée, 1854 L Jun – M Aug m B g
T: Forbes (1954), Covell (1984)
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM

### *60.6. Hypeninae*

A relatively small subfamily of medium-sized (30–50 mm wingspan) moths with broadly triangular (deltoid) forewings and elongate palps. Adults of several AB species are sexually dimorphic. Several species hibernate and overwinter as adults. The group is defined by a unique set of larval characters (Beck 1999–2000). Some larvae are semi-loopers. They feed on various vascular plants.

Hypeninae occur worldwide. In North America, the subfamily is comprised of about 30 species, all but one in the genus *Hypena*. Eight species in two genera occur in AB. Most of the species listed here were treated by Forbes (1954).

1672 R *Hypena bijugalis* (Walker, 1859) M May – E Jul – B –
T: Forbes (1954)
L: Bowman (1951) C: CNC, NFRC, UASM

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1673 | | R | *Hypena palparia* (Walker, 1861)<br>T: Forbes (1954)<br>L: Bowman (1951), Ives and Wong (1988) C: CNC, OLDS, UASM | L Jun – L Jul | – | B | – |
| 1674 | * | R | *Hypena deceptalis* (Walker, 1859)<br>T: Forbes (1954)<br>L: None C: BIRD, OLDS | L Jun – E Jul | – | b | g |
| 1675 | | R | *Hypena atomaria* Smith, 1903<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, UASM | L Jun – L Jul | – | B | g |
| 1676 | | R | *Hypena edictalis* (Walker, 1859)<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – L Aug | – | B | – |
| 1677 | | R | *Hypena humuli* Harris, 1841<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Apr – E Jun; M Aug – M Oct (H) | M | B | g |
| 1678 | | R | *Hypena californica* Behr, 1870<br>L: Bowman (1951), Crumb (1956) C: CNC, UASM | L Apr – E May; L Aug (H) | M | B | g |
| 1678.1 | * | P | *Hypena scabra* (Fabricius, 1798)<br>T: Forbes (1954) | ? | – | b | g |
| 1679 | * | R | *Hypena eductalis* Walker, [1859]<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, UASM | E Jun – E Aug | – | B | g |

### 60.7. Scoliopteryginae

Medium-sized (40–70 mm wingspan), robust moths, often with prominent 'beaked' palps and a sinuate forewing anal margin. The proboscis of adults is modified with tearing hooks for piercing fruit. This subfamily was previously treated as a subgroup of the Calpinae (Lafontaine and Schmidt in press).

This group is most widespread and has the greatest species richness in the tropical regions of the world. Eleven species occur in North America. A diagnosis of the single species occurring in AB was treated by Forbes (1954) and Covell (1984).

**Scoliopterygini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1680 | * | R H | *Scoliopteryx libatrix* (Linnaeus, 1758)<br>Herald<br>T: Forbes (1954) | L May – Jun; L Aug – E Sep (H) | M | B | G |

L: Bowman (1951), Crumb (1956), Prentice (1962), Ives and Wong (1988) C: CNC, NFRC, OLDS, PMAE, UASM

### *60.8. Hypenodinae*

Very small (10–14 mm wingspan) moths with relatively narrow wings, clothed with very fine scales. The subfamily is defined by several larval characters and by the evenly scaled frons (Fibiger and Lafontaine 2005). Interestingly, the recently described Micronoctuidae Fibiger, 2005 (primarily a palaeotropical group not known from the New World), appears to be very closely related to the Hypenodinae, based on molecular data (Zahiri et al. in press). The Hypenodinae contains the smallest North American noctuids. The larvae feed on fungi, lichens and/or algae.

This is a small subfamily, currently with only five North American genera. Two species in the genus *Hypenodes* occur in AB. *Hypenodes* was revised by Ferguson (1954).

1681 * R *Hypenodes fractilinea* (Smith, 1908) L Jun – E Aug – B g
T: Ferguson (1954)
L: [Bowman (1951)], Pohl et al. (2004b) C: CNC, NFRC, UASM

1682 * R *Hypenodes sombrus* Ferguson, 1954 L Jul m B –
T: Ferguson (1954)
L: None C: UASM

### *60.9. Boletobiinae*

Small (22–25 mm wingspan), broad-winged nocturnal moths, superficially very similar to some geometrids. They are defined by a number of adult and larval characters, including the long, thin, roughly scaled palps and the fully scaled frons of the adults. The larvae feed on mushrooms and bracket fungi.

The Boletobiinae occur in both North America and Eurasia, with about 18 species in four genera in North America, including one introduced European genus (*Parascotia*), and one that is likely misplaced in the Boletobiinae (*Prosoparia*; Lafontaine and Schmidt in press). One species is found in AB. Some North American species, including the sole species occurring in AB, were covered by Franclemont (1985).

1683 R *Mycterophora inexplicata* (Walker, [1863]) E Jul – L Jul – B g
T: Forbes (1954), Franclemont (1985)
L: Bowman (1951) C: CNC, NFRC, UASM

### *60.10. Phytometrinae*

A small group of small to medium-sized (20–30 mm wingspan) moths with relatively broad wings. The group is defined by a number of derived character states, mainly genitalic. The Phytometrinae have traditionally been included within the Hypeninae, but the subfamily was reinstated by Fibiger and Lafontaine (2005).

In North America, the subfamily Phytometrinae contains some 25 species in nine genera. The group is in need of revision. The lone AB species was treated by Forbes (1954) and Covell (1984).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1684 | | R | *Spargaloma sexpunctata* Grote, 1873<br>T: Forbes (1954), Covell (1984)<br>L: Bowman (1951) C: CNC, NFRC, UASM | M Jun – M Jul | – | B | g |

### 60.11. Erebinae

Medium-sized to very large (50–160 mm wingspan) moths, often with brightly colored hindwings or with eyespots on fore- and hingwings (Thermesiini). The subfamily contains many large colorful species, as well as several species that are active during the day. Larval hostplants are a diverse array of vascular plants, but tend to be specialized within groups, such as deciduous trees and shrubs for the Catocalini; a few (e.g., *Caenurgina* spp.) are occasional pests of forage crops.

Erebinae occur worldwide but are most diverse and abundant in tropical and subtropical regions. There are approximately 325 species in 65 genera in North America, of which 35 species are reported from AB. The group as a whole is in need of work, but revisions have been published for the tribe Melipotini (Richards 1939) and the genera *Euclidia* (Franclemont 1957) and *Zale* (Smith 1908). The genus *Catocala* was illustrated by Barnes and McDunnough (1918a); a modern revision of the genus is currently under way as an upcoming *Moths of North America* fascicle by Gall and Hawks.

**Thermesiini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1685 | * | S | *Ascalapha odorata* (Linnaeus, 1758)<br>Black Witch<br>T: Forbes (1954), Covell (1984)<br>L: Bowman (1951), Godwin (1976) C: CNC, OLDS, PMAE, UASM | L Jul – L Aug | M | b | G |

**Toxocampini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1686 | * | R | *Lygephila victoria* (Grote, 1864)<br>L: None C: UASM | E Jul | M | – | – |
| 1686.1 | * | P | *Tathorhynchus exsiccata* (Lederer, 1865)<br>T: Forbes (1954) | ? | – | – | G |

**Melipotini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1687 | | R | *Melipotis jucunda* (Hübner, 1818)<br>T: Richards (1939), Forbes (1954)<br>L: None C: CNC, UASM | M May – L Jun | – | – | G |
| 1688 | * | U | *Melipotis acontioides* Guenée, 1852<br>T: Richards (1939)<br>L: Richards (1939) C: Unknown | ? | – | – | g |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1689 | * | U | *Bulia deducta* Morrison, 1875<br>T: Richards (1939), Forbes (1954)<br>L: Bowman (1951) C: Unknown | Jul | m | b | – |
| 1690 | * | R | *Drasteria sabulosa* Edwards, 1881<br>T: Richards (1939)<br>L: None C: UASM | L May – E Jun | M | – | – |
| 1691 | * | R | *Drasteria pallescens* (Grote and Robinson, 1866)<br>T: Richards (1939)<br>L: None C: CNC, UASM | L Jun – M Jul | – | – | G |
| 1692 | * | R | *Drasteria divergens* (Behr, 1870)<br>T: Richards (1939)<br>L: None C: BCSC, WLNP | Jul | M | – | – |
| 1693 | * | R | *Drasteria petricola* (Walker, 1858)<br>T: Richards (1939)<br>L: Richards (1939), Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | E May – M Jul | M | B | G |
| 1694 | * | R | *Drasteria hudsonica* (Grote and Robinson, 1865)<br>T: Richards (1939), Forbes (1954)<br>L: Richards (1939), Bowman (1951), Prentice (1962), Ives and Wong (1988) C: CNC, NFRC, OLDS, PMAE, UASM | M May – M Aug | M | b | – |
| 1695 | | R | *Drasteria perplexa* (Edwards, 1884)<br>T: Richards (1939)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M May – M Jul | – | b | G |
| 1696 | * | R | *Drasteria adumbrata* (Behr, 1870)<br>T: Richards (1939), Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | L May – M Jul | – | B | g |
| 1697 | * | R | *Drasteria howlandii* (Grote, 1865)<br>T: Richards (1939), Forbes (1954)<br>L: None C: UASM | L May | – | – | G |

**Euclidiini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1698 | * | R | *Euclidia cuspidea* (Hübner, 1818)<br>T: Forbes (1954), Franclemont (1957)<br>L: Bowman (1951), Crumb (1956), Franclemont (1957) C: CNC, NFRC, OLDS, PMAE, UASM | L Apr – E Jul | M | B | G |
| 1699 | | R | *Caenurgina annexa* (Edwards, 1881)<br>T: Holland (1903)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M May – L Jun | M | – | – |
| 1700 | * | R | *Caenurgina crassiuscula* (Haworth, 1809)<br>T: Forbes (1954) | M May – L Sep | M | B | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | | | | |
| 1701 | | R | *Caenurgina erechtea* (Cramer, 1780)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – M Sep | m | b | G |
| **Ophiusini** | | | | | | | |
| 1701.1 | * | P | *Zale lunata* (Drury, 1773)<br>T: Smith (1908), Forbes (1954) | ? | – | b | G |
| 1702 | * | R | *Zale galbanata* (Morrison, 1876)<br>T: Smith (1908), Forbes (1954)<br>L: None C: CNC | M Jun | – | – | G |
| 1703 | | R | *Zale minerea* (Guenée, 1852)<br>T: Smith (1908), Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | M May – E Aug | M | B | G |
| 1704 | * | R | *Zale duplicata* (Bethune, 1865)<br>T: Smith (1908), McDunnough (1943b), Forbes (1954)<br>L: McDunnough (1943b), Bowman (1951), Prentice (1962), Ives and Wong (1988) C: CNC, NFRC, OLDS, UASM | L Apr – M Jun | M | B | – |
| **Catocalini** | | | | | | | |
| 1705 | | R | *Catocala relicta* Walker, 1858<br>T: Barnes and McDunnough (1918a), Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Aug – L Sep | M | B | G |
| 1706 | | R | *Catocala unijuga* Walker, 1858<br>T: Barnes and McDunnough (1918a), Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – L Sep | M | B | g |
| 1707 | | R | *Catocala parta* Guenée, 1852<br>T: Barnes and McDunnough (1918a), Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | L Jul – E Sep | – | – | G |
| 1708 | | R | *Catocala luciana* Strecker, 1874<br>T: Barnes and McDunnough (1918a), Forbes (1954)<br>L: Bowman (1951), Hooper (1990a) C: CNC, UASM | M Aug – E Oct | – | – | G |
| 1709 | * | R | *Catocala hermia* Edwards, 1880 | L Jul – E Sep | – | – | G |

T: Barnes and McDunnough (1918a)
L: Bowman (1951) C: CNC, OLDS, PMAE, UASM

1710 * R *Catocala californica* Edwards, 1864 L Aug M – –
T: Barnes and McDunnough (1918a)
L: None C: UASM

1711 R *Catocala briseis* Edwards, 1864 L Jul – L Sep M B G
T: Barnes and McDunnough (1918a), Forbes (1954)
L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

1712 * R *Catocala grotiana* Bailey, 1879 E Sep M – –
T: Barnes and McDunnough (1918a)
L: none C: UASM

1713 * R *Catocala semirelicta* Grote, 1874 M Jul – L Sep M B G
T: Barnes and McDunnough (1918a), Forbes (1954)
L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

1714 * R *Catocala meskei* Grote, 1873 L Jul – M Sep – – G
T: Barnes and McDunnough (1918a), Forbes (1954)
L: Bowman (1951) C: CNC, UASM

1715 R *Catocala junctura* Walker, 1858 L Aug – E Sep – – G
T: Barnes and McDunnough (1918a), Forbes (1954)
L: None C: CNC, UASM

1716 R *Catocala concumbens* Walker, 1858 M Aug – b G
T: Barnes and McDunnough (1918a), Forbes (1954)
L: Bowman (1951) C: CNC, UASM

1716.1 * P *Catocala sordida* Grote, 1877 ? – B –
T: Barnes and McDunnough (1918a), Forbes (1954)

1717 R *Catocala ultronia* (Hübner, 1823) E Aug – M Aug – – G
T: Barnes and McDunnough (1918), Forbes (1954)
L: None C: CNC, UASM

1718 * R *Catocala praeclara* Grote and Robinson, 1866 E Sep – – G
T: Barnes and McDunnough (1918a), Forbes (1954)
L: None C: CNC, UASM

1719 R *Catocala blandula* Hulst, 1884 E Jul – L Sep m B G
T: Barnes and McDunnough (1918a), Forbes (1954)
L: Bowman (1951) C: CNC, OLDS, PMAE, UASM

## *61. Euteliidae*

Medium-sized (approximately 30 mm wingspan) moths, usually with brightly colored, patterned wings. They have an unusual resting posture, with the wings rolled and held

out from the body. This is a small group of primarily tropical moths, with 16 species in three genera in North America, one of which reaches AB. Most feed on sumacs and poison-ivy (*Rhus* spp.).

1720 * R *Marathyssa inficita* (Walker, 1865) L Jun – – G
T: Forbes (1954)
L: None C: NFRC, UASM

## 62. Nolidae

The North American nolids are small (15–25 mm wingspan), mostly drab moths with variously shaped wings, although some topical groups are large and colorful, and very unlike temperate region species (see for example Holloway 2003). This group has been variously assigned to its own family or treated as a subfamily within the Noctuidae or the former Arctiidae (Kitching and Rawlins 1999) due to uncertain affinities of several unique structural traits. Recent molecular data shows that there is no support for including them within either the Erebidae or Noctuidae (Zahiri et al. in press), although a re-evaluation of morphological traits suggests they may be closer to the trifid Noctuidae (Fibiger et al. 2009), a position not refuted by the molecular evidence. They are well-defined as a group by a number of unique structural traits, including a boat-shaped, double walled cocoon with a vertical exit slit.

Approximately 1400 species of Nolidae are known worldwide. They are most diverse in the Paleotropics. There are currently 40 species in 10 genera in North America, excluding a number of undescribed species (BCS, unpubl. data); four species occur in AB. The genera *Nycteola* (Fletcher 1959; Rindge 1961) and *Baileya* (Brou 2004) have been revised. A few species are pests of cotton and sorghum. Adults of the genus *Arcyophora* feed on the tears of livestock and have been implicated in the transmission of viruses and infections.

### 62.1 Nolinae

Most nolines are small moths (~ 20 mm wingspan), often with patches of raised scales on the forewings, bearing superficial resemblance to some lichen moth (Arctiinae: Lithosiini) lineages. Larvae of some genera have the unusual behaviour of stacking cast head capsules on top of the current head capsule. Of the 20 species in North America, only one occurs in AB.

1721 R *Nola cilicoides* (Grote, 1873) L Jun – L Aug – B g
L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

### 62.2 Chloephorinae

This subfamily includes a structurally and phylogenetically diverse number of nolid groups, loosely defined by the presence of tymbal (sound-producing) organs at the base of the abdomen. In North America the subfamily is however represented only by the tribe Sarrothripini, of which the genus *Nycteola* is typical. Recent molecular results show that the Sarrothripini likely did not derive from within the Chloephorinae (Za-

hiri et al. in press), and the classification within the nolids will undoubtedly change. Only two *Nycteola* species occur in AB.

**Sarrothripini**

1722 * R *Nycteola frigidana* (Walker, 1863) — L Apr – E May; L M B g
T: McDunnough (1943b), Fletcher (1959) — Jul – M Sep (H)
L: McDunnough (1943b), Bowman (1951), Crumb (1956), Prentice (1962), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, UASM

1723 * R *Nycteola cinereana* Neumoegen and Dyar, 1893 — L Aug – L Oct – B g
T: McDunnough (1943b), Fletcher (1959)
L: Ives and Wong (1988) C: CNC, NFRC, OLDS, UASM

### 62.3 Risobinae

The genus *Baileya* is the sole representative of this subfamily in North America, with seven species. Although superficially quite different in appearance from the type-genus *Risoba* of the Asian tropics (Holloway 2003), unique genitalic structures, and to some extent wing pattern, unify this group. *Baileya* are moderately-sized moths of mesic forest and woodland habitats, and the larvae feed on deciduous trees and shrubs. Forbes (1954) diagnosed the species known at that time, and two additional species were described recently from the southeastern United States (Brou 2004).

1723.1 * P *Baileya doubledayi* Guenée, 1852 — ? – B –
T: Forbes (1954), Brou (2004)

1724 * R *Baileya ophthalmica* (Guenée, 1852) — L May – M Jun – B g
T: Forbes (1954), Brou (2004)
L: None C: CNC, UASM

## 63. Noctuidae

As currently defined, the Noctuidae include only those groups with a trifid hindwing venation (Lafontaine and Fibiger 2006), to the exclusion of the Erebidae, which were formerly included here. Most Noctuoidea species of economic concern fall in this group, such as the cutworms, armyworms and earworms. There are about 8,000 named species of Noctuidae globally, reaching their greatest diversity in temperate regions, particluarly grasslands and steppe habitats. Approximately 2,500 noctuid species occur in North America; 643 are reported herein from AB.

### 63.1. Plusiinae

A group of primarily medium-sized (30–50 mm wingspan) moths with many colorful and attractive species. Many have metallic marks on the forewings, and some are diurnal flower visitors. The subfamily is defined by the quadrifid hindwing venation and lashed eyes. The larvae of most species are semi-loopers with a reduced number of

prolegs. They feed on the foliage of a wide variety of plants, and several (e.g., *Trichoplusia* spp.) are important agricultural pests.

There are approximately 400 species of Plusiinae in the world, centered in temperate habitats in the northern hemisphere. Approximately 80 species in about 24 genera occur in North America; 41 species are known from AB. The North American species have been revised by McDunnough (1944b) and more recently by Lafontaine and Poole (1991).

**Abrostolini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1725 | | R | *Abrostola urentis* Guenée, 1852<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, UASM | E Jun – M Aug | – | B | g |

**Argyrogrammatini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1726 | * | M | *Trichoplusia ni* (Hübner, [1803])<br>Cabbage Looper<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Lafontaine and Poole (1991) C: CNC, UASM | E Aug – M Sep | M | b | G |

**Plusiini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1727 | | R | *Diachrysia aereoides* (Grote, 1864)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | M Jun – M Aug | m | b | G |
| 1728 | | R | *Diachrysia balluca* Geyer, 1832<br>T: Lafontaine and Poole (1991)<br>L: None C: CNC, UASM | M Jul – M Aug | – | B | g |
| 1729 | | R | *Pseudeva purpurigera* (Walker, 1858)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, PMAE, UASM | E Jul – L Aug | – | b | g |
| 1730 | * | R | *Pseudeva palligera* (Grote, 1881)<br>T: Lafontaine and Poole (1991)<br>L: None C: UASM | M Jul – E Sep | M | – | g |
| 1731 | * | R H | *Polychrysia esmeralda* (Oberthür, 1880)<br>T: Lafontaine and Poole (1991) | L Jun – M Aug | M | b | g |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: [Bowman (1951)], [Crumb (1956)], Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | | | | |
| 1732 | | R | *Chrysanympha formosa* (Grote, 1865)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | M Jul – M Aug | – | B | – |
| 1733 | | R | *Eosphoropteryx thyatyroides* (Guenée, 1852)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, UASM | L Jul – L Aug | – | B | – |
| 1734 | * | M | *Megalographa biloba* (Stephens, 1830)<br>T: Lafontaine and Poole (1991)<br>L: None C: AGRL | M Aug | – | – | G |
| 1735 | | R | *Autographa rubidus* Ottolengui, 1902<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, UASM | E Jun – E Jul | m | B | – |
| 1736 | | R | *Autographa sansoni* Dod, 1910<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, NFRC, UASM | E Jun – L Jul | M | b | – |
| 1737 | | R | *Autographa bimaculata* (Stephens, 1830)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | E Jul – M Sep | M | B | g |
| 1738 | | R | *Autographa mappa* (Grote and Robinson, 1868)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | E Jun – M Jul | M | B | g |
| 1739 | | R | *Autographa pseudogamma* (Grote, 1875)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, PMAE, UASM | M May – E Aug | M | b | g |
| 1740 | | R | *Autographa californica* (Speyer, 1875)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Lafontaine and Poole (1991) C: CNC, NFRC, PMAE, UASM | L Apr – L Oct | M | B | G |
| 1741 | | R | *Autographa flagellum* (Walker, [1858])<br>T: Lafontaine and Poole (1991) | L Jun – L Aug | m | B | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, UASM | | | | | |
| 1742 | | R | *Autographa metallica* (Grote, 1875)<br>T: Lafontaine and Poole (1991)<br>L: Lafontaine and Poole (1991) C: CNC, UASM | E Sep | | M | – | – |
| 1743 | | R | *Autographa v-alba* Ottolengui, 1902<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, PMAE, UASM | M Aug | | M | – | – |
| 1744 | | R | *Autographa ampla* (Walker, [1858])<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jun – M Sep | | M | B | g |
| 1745 | * | R | *Anagrapha falcifera* (Kirby, 1837)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Lafontaine and Poole (1991) C: CNC, NFRC, PMAE, UASM | M May – L Sep (2Br) | | M | b | G |
| 1746 | | R | *Syngrapha octoscripta* (Grote, 1874)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, UASM | M Jul – M Sep | | M | B | G |
| 1747 | | R | *Syngrapha epigaea* (Grote, 1875)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Prentice (1962), Lafontaine and Poole (1991) C: CNC, NFRC, UASM | M Jul – E Sep | | M | B | – |
| 1748 | * | R | *Syngrapha selecta* (Walker, [1858])<br>T: Lafontaine and Poole (1991)<br>L: Prentice (1962), Hooper (1990b) , Lafontaine and Poole (1991) C: CNC, NFRC, UASM | M Jul | | m | B | – |
| 1749 | * | R | *Syngrapha viridisigma* (Grote, 1874)<br>T: Lafontaine and Poole (1991)<br>L: [Bowman (1951)], [Prentice (1962)], Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, UASM | E Jul – E Sep | | M | B | g |
| 1750 | | R | *Syngrapha orophila* Hampson, 1908<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Lafontaine and Poole (1991) C: CNC, UASM | M Jul – L Jul | | M | – | – |
| 1751 | * | R | *Syngrapha borea* (Aurivillius, 1890)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, NFRC, PMAE, UASM | M Jul – M Aug | | M | b | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1752 | * | R H | *Syngrapha diasema* (Boisduval, 1828)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, UASM | E – L Jul | M | B | – |
| 1753 | * | R H | *Syngrapha interrogationis* (Linnaeus, 1758)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, UASM | L Jul – E Sep | M | B | – |
| 1754 | * | R | *Syngrapha surena* (Grote, 1882)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: UASM | L Jul | M | – | – |
| 1755 | | R | *Syngrapha alias* (Ottolengui, 1902)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Prentice (1962), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | L Jun – L Aug | M | B | – |
| 1756 | | R | *Syngrapha abstrusa* Eichlin and Cunningham, 1978<br>T: Lafontaine and Poole (1991)<br>L: Hooper (1990b) C: CNC, UASM | M Jun – L Jun | M | – | – |
| 1757 | | R | *Syngrapha rectangula* (Kirby, 1837)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Prentice (1962), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jul – M Aug | M | B | – |
| 1758 | | R | *Syngrapha angulidens* (Smith, 1891)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, UASM | M Jul – L Aug | M | – | – |
| 1758.1 | * | P | *Syngrapha montana* (Packard, 1869)<br>T: Lafontaine and Poole (1991) | ? | – | B | g |
| 1759 | * | R H | *Syngrapha microgamma* (Hübner, 1823)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, UASM | L Jun – M Jul | m | B | – |
| 1760 | * | R | *Syngrapha alticola* (Walker, [1858])<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, UASM | E Jul – E Aug | M | – | – |
| 1761 | | R H | *Syngrapha parilis* (Hübner, [1809])<br>T: Lafontaine and Poole (1991) | M Jul | M | – | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, UASM | | | | |
| 1762 | | R | *Syngrapha ignea* (Grote, 1863)<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Lafontaine and Poole (1991) C: CNC, NFRC, PMAE, UASM | M Jun – E Aug | M | B | – |
| 1763 | * | R H | *Plusia putnami* Grote, 1873<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Crumb (1956), Lafontaine and Poole (1991), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | L May – L Aug | M | B | g |
| 1764 | * | R | *Plusia magnimacula* Handfield and Handfield, 2006<br>T: Handfield and Handfield (2006)<br>L: Handfield and Handfield (2006) C: CNC, UASM | M Jul – Sep | M | B | – |
| 1764.1 | * | P | *Plusia contexta* Grote, 1873<br>T: Lafontaine and Poole (1991) | ? | – | B | – |
| 1765 | | R | *Plusia venusta* Walker, 1865<br>T: Lafontaine and Poole (1991)<br>L: Bowman (1951), Lafontaine and Poole (1991) C: CNC, PMAE, UASM | L Jun – M Aug | – | B | g |

### 63.2. *Eustrotiinae*

Small to medium-sized (20–40 mm wingspan) moths with broad wings. The group is defined by wing vein characters (modifications to $M_2$) and larval characters (the larvae of most species retain setae $SV_2$ on the first abdominal segment). This is a complex grouping of moths, badly in need of revisionary and phylogenetic study. As presently defined, the group is probably paraphyletic and possibly polyphyletic in composition. Larvae of most species feed on plants.

Of the approximately 56 species occurring in North America, two species are known to occur in AB.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1766 | | R | *Deltote bellicula* Hübner, 1818<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | E Jun – E Jul | – | B | – |
| 1767 | * | R | *Protodeltote albidula* (Guenée, 1852)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, PMAE, UASM | L May – L Jul | M | B | g |
| 1767.1 | * | P | *Maliattha synochitis* (Grote and Robinson, 1868)<br>T: Forbes (1954) | ? | – | – | G |

### 63.3. Acontiinae

Relatively small (15–30 mm wingspan) trifine noctuid moths. Many species are bird-dropping mimics, with predominately white, cream, or yellow wings. The subfamily is defined by structural characters of the scaphium, tympanum, and male genitalia of the adults, and also the number and placement of setae SV in the larvae (Fibiger and Lafontaine 2005). The North American Acontiinae fauna consists of 87 species; six species in four genera occur in AB. Several of these are among the smallest noctuids in the province. The smaller species of Acontiinae have frequently been misplaced in collections as unidentified microlepidoptera. The group needs revision.

**Acontiini**

1768 * R *Ponometia semiflava* (Guenée, 1852) L May – L Jul – b G
T: Forbes (1954)
L: Bowman (1951) C: CNC, OLDS, UASM

1769 * R *Ponometia binocula* (Grote, 1875) M Jun – L Jul – – G
T: Forbes (1954)
L: Bowman (1951) C: CNC, UASM

1770 * R *Ponometia tortricina* (Zeller, 1872) M May – E Aug – b G
T: Forbes (1954)
L: Bowman (1951) C: CNC, OLDS, UASM

1771 * R *Ponometia elegantula* (Edwards, 1878) M May – M Jul – – G
L: None C: CNC, OLDS, UASM

1772 * R *Ponometia sutrix* (Grote, 1880) L Jun – L Jul – – G
L: None C: UASM, CNC

1773 * R *Tarache augustipennis* Grote, 1875 M May – M Aug m b G
L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

### *63.4. Pantheinae*

A small group of robust, medium to large moths (40–60 mm wingspan). Although placed in their own family (Pantheidae) by Kitching and Rawlins (1999), these moths have since been moved to the Noctuidae as a subfamily by Fibiger and Lafontaine (2005) and Lafontaine and Fibiger (2006), largely on the basis of recent molecular work by Mitchell et al. (2000, 2005b). Adults of *Panthea* have reduced mouthparts and apparently cannot feed.

The subfamily contains approximately 20 species in North America, divided among six genera. Four species in two genera occur in AB. The largest genus, *Panthea*, was recently revised by Anweiler (2009).

1774 * R *Panthea acronyctoides* (Walker, 1861) L May – M Jul M B –
T: Anweiler (2009)
L: [Bowman (1951)], Prentice (1962), Ives and Wong (1988), Anweiler (2009) C: CNC, NFRC, OLDS, PMAE, UASM

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1775 | * | R | *Panthea virginarius* (Grote, 1880)<br>T: Anweiler (2009)<br>L: [Bowman (1951)], Prentice (1962), Anweiler (2009) C: CNC, NFRC, OLDS, UASM | L Jun – L Jul | M | b | – |
| 1776 | * | R | *Panthea furcilla* (Packard, 1864)<br>T: Anweiler (2009)<br>L: Prentice (1962), Ives and Wong (1988), Anweiler (2009) C: CNC, NFRC, OLDS, UASM | M Jun – M Aug | M | B | – |
| 1776.1 | * | P | *Colocasia flavicornis* (Smith, 1884)<br>T: Smith and Dyar (1898), Forbes (1954) | ? | – | B | – |
| 1777 | | R | *Colocasia propinquilinea* (Grote, 1873)<br>T: Forbes (1954)<br>L: None C: CNC, UASM | M May – E Jun | – | B | – |

### 63.5. Dilobinae

Medium-sized (30–50 mm wingspan) gray, black, and white moths. Historically, most members of this subfamily were included in the Pantheinae, but Kitching and Rawlins (1999) segregated the two member genera (*Raphia* Hübner, 1821 and *Diloba* Boisduval, 1840) into their own separate subfamilies, the Raphiinae and the Dilobinae, respectively. Most recently, Fibiger et al. (2009) combined the Raphiinae in an expanded concept of the Dilobinae. The Dilobinae, Acronictinae and Pantheinae share many structural characteristics, possibly indicating a common evolutionary origin (Fibiger and Lafontaine 2005; Fibiger et al. 2009). Larvae of most species feed on the foliage of Salicaceae.

The subfamily Dilobinae is Holarctic in distribution and comprises 13 described species. Six species occur in North America, one in AB. There have been no recent revisions of the subfamily, but the AB species (*Raphia frater*) was treated by Forbes (1954), Covell (1984), and Handfield (1999). The larva was illustrated in Wagner et al. (1997).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1778 | * | R | *Raphia frater* Grote, 1864<br>T: Forbes (1954), Covell (1984), Handfield (1999)<br>L: Bowman (1951), Prentice (1962), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L May – M Jul | M | B | G |

### 63.6. Acronictinae – dagger moths

Mostly medium-sized (30–60 mm wingspan) gray and white moths with black markings. Many species have very attractive larvae covered with long dense setae. The larvae of most North American species feed on the foliage of closely related groups of woody trees or shrubs, although a few species are polyphagous or feed on herbs.

The subfamily is Holarctic in distribution, with about 90 species in eight genera in North America; 24 species in four genera occur in AB. Most species are currently

placed in the large genus *Acronicta*, which is known to be polyphyletic and is badly in need of revision. The group was last revised over 100 years ago by Smith and Dyar (1898). Most of the AB species were discussed by Forbes (1954), Covell (1984), and Handfield (1999).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1779 | * | R | *Acronicta americana* (Harris, 1841)<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, UASM | L May – E Jul | – | b | G |
| 1780 | * | R | *Acronicta dactylina* Grote, 1874<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Crumb (1956), Prentice (1962) C: CNC, NFRC, OLDS, PMAE, UASM | L May – L Jul | m | B | G |
| 1781 | * | R | *Acronicta lepusculina* Guenée, 1852<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Crumb (1956), Prentice (1965) C: CNC, NFRC, OLDS, UASM | E Jun – E Jul | M | B | G |
| 1782 | * | R | *Acronicta cyanescens* Hampson, 1909<br>T: Smith and Dyar (1898)<br>L: None C: UASM | L Jun – E Jul | M | – | – |
| 1783 | * | R H | *Acronicta vulpina* Guenée, 1883<br>T: Smith and Dyar (1898)<br>L: [Bowman (1951)], [Prentice (1962)], Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L May – E Jul | M | B | G |
| 1784 | | R | *Acronicta innotata* Guenée, 1855<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L May – M Jul | M | B | g |
| 1785 | | R | *Acronicta radcliffei* (Harvey, 1875)<br>T: Smith and Dyar (1898)<br>L: None C: CNC, UASM | E Jun – E Jul | – | b | g |
| 1786 | * | R | *Acronicta tritona* (Hübner, 1818)<br>T: Smith and Dyar (1898)<br>L: None C: CNC | M Jun | – | B | – |
| 1787 | * | R | *Acronicta grisea* Walker, 1856<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L May – M Jul | M | B | g |
| 1788 | * | R | *Acronicta falcula* (Grote, 1877)<br>T: Smith and Dyar (1898)<br>L: None C: CNC, UASM | E – L Jun; E Sep (2Br) | M | – | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1788.1 | * | P | *Acronicta funeralis* (Grote and Robinson, 1866)<br>T: Smith and Dyar (1898) | May – Jul | – | – | G |
| 1789 | * | R | *Acronicta quadrata* Grote, 1874<br>T: Smith and Dyar (1898)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | E Jun – M Jul | M | – | G |
| 1790 | * | R | *Acronicta superans* (Guenée, 1852)<br>T: Smith and Dyar (1898)<br>L: None C: CNC, NFRC, OLDS, UASM | L May – M Jul | m | b | g |
| 1791 | * | R | *Acronicta hasta* Guenée, 1852<br>T: Smith and Dyar (1898)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | M May – L Jun | – | b | g |
| 1792 | * | R | *Acronicta interrupta* Guenée, 1852<br>T: Smith and Dyar (1898)<br>L: None C: CNC | M Aug | – | – | G |
| 1793 | | R | *Acronicta fragilis* Guenée, 1852<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L May – M Jul | – | B | g |
| 1794 | * | R | *Acronicta impleta* Walker, 1856<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M May – L Jul | – | B | G |
| 1795 | * | R | *Acronicta sperata* Grote, 1873<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, OLDS, PMAE, UASM | M May – L Jun | – | B | G |
| 1796 | * | R | *Acronicta impressa* Walker, 1856<br>T: Smith and Dyar (1898), Rings et al. (1992)<br>L: Bowman (1951), Crumb (1956), Prentice (1965), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Apr – E Aug | M | B | G |
| 1797 | * | R | *Acronicta longa* Guenée, 1852<br>T: Smith and Dyar (1898)<br>L: None C: CNC, UASM | L May – L Jun | – | – | G |
| 1797.1 | * | P | *Acronicta perdita* Grote, 1874<br>T: Smith and Dyar (1898) | May – Jul | M | – | – |
| 1798 | | R | *Acronicta oblinita* (Smith, 1797)<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, OLDS, UASM | L May – E Jul | – | B | g |
| 1799 | * | R | *Acronicta lanceolaria* (Grote, 1875) | M May – E Jun | – | b | G |

T: Smith and Dyar (1898)
L: Ives and Wong (1988) C: CNC, UASM

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1800 | * | R | *Acronicta lupini* Grote, 1873<br>T: Smith and Dyar (1898)<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, UASM | L May – L Jul | M | – | – |
| 1801 | * | R | *Simyra insularis* (Herrich-Schäffer, 1868)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, OLDS, UASM | L May – E Jun; E Aug – E Sep (2Br?) | – | B | G |
| 1802 | * | R | *Harrisimemna trisignata* (Walker, 1856)<br>T: Forbes (1954)<br>L: Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E Jun – L Jun | – | B | g |

### *63.7. Cuculliinae – sharks*

Medium-sized (40–60 mm wingspan) nocturnal moths with elongate, pointed wings. The group is defined by five adult and larval characters. Cuculliinae as currently defined comprises mainly the large genus *Cucullia* and a few very similar genera. Historically, the subfamily Cuculliinae was large but polyphyletic. It was redefined and greatly reduced in size by Poole (1995), Kitching and Rawlings (1999) and most recently by Fibiger and Lafontaine (2005) and Lafontaine and Fibiger (2006). The larvae of most species feed on flowers and fruits of herbaceous plants, in particular Asteraceae.

There are about 40 Cuculliinae species in four genera in North America; 12 species (all in the genus *Cucullia*) are known in AB. The group was revised by Poole (1995).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1802.1 | * | P | *Cucullia asteroides* Guenée, 1852<br>T: Poole (1995) | ? | – | b | g |
| 1803 | | R | *Cucullia montanae* Grote, 1882<br>T: Poole (1995)<br>L: Dod (1916), Bowman (1951), Crumb (1956), Poole (1995) C: CNC, UASM | E Jul – M Aug | – | – | G |
| 1804 | * | R | *Cucullia similaris* Smith, 1892<br>T: Poole (1995)<br>L: Dod (1916), Bowman (1951), Hooper (1992), Poole (1995) C: CNC | M Jul – Aug | – | – | G |
| 1805 | * | R | *Cucullia omissa* Dod, 1916<br>T: Poole (1995)<br>L: Dod (1916), Bowman (1951), Crumb (1956), Poole (1995) C: CNC, OLDS, UASM, USNM | L Jun – M Jul | M | b | – |
| 1806 | | R | *Cucullia florea* Guenée, 1852<br>T: Poole (1995) | E Jun – L Jul | M | B | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951), Poole (1995) C: CNC, PMAE, UASM | | | | |
| 1807 | | R | *Cucullia postera* Guenée, 1852<br>T: Poole (1995)<br>L: Dod (1916), Bowman (1951), Poole (1995) C: CNC, UASM | E Jun – E Aug | M | B | g |
| 1807.1 | * | P | *Cucullia convexipennis* Grote and Robinson, 1868<br>T: Poole (1995) | ? | – | – | G |
| 1808 | | R | *Cucullia intermedia* Speyer, 1870<br>T: Poole (1995)<br>L: Bowman (1951), Poole (1995) C: CNC, NFRC, OLDS, PMAE, UASM | E May – M Jul | M | B | G |
| 1809 | | R | *Cucullia speyeri* Lintner, 1874<br>T: Poole (1995)<br>L: Bowman (1951), Poole (1995) C: CNC, UASM | M May – L Jul | – | b | G |
| 1810 | * | R | *Cucullia dorsalis* Smith, 1892<br>T: Poole (1995)<br>L: Crumb (1956) C: CNC, UASM | L May | – | – | G |
| 1811 | | R | *Cucullia antipoda* Strecker, 1878<br>T: Poole (1995)<br>L: Poole (1995) C: CNC, UASM | L May – L Jun | – | – | G |
| 1812 | | R | *Cucullia luna* Morrison, 1875<br>T: Poole (1995)<br>L: Bowman (1951), Poole (1995) C: CNC, UASM | L Jun – M Aug | – | – | G |
| 1813 | * | R | *Cucullia strigata* (Smith, 1892)<br>T: Poole (1995)<br>L: Poole (1995) C: CNC, NFRC, UASM | E Jun | M | – | – |
| 1814 | * | R | *Cucullia albida* (Smith, 1894)<br>T: Poole (1995)<br>L: Bowman (1951), Poole (1995) C: CNC, UASM, USNM | M AprilL – L May | M | b | g |

### 63.8. Amphipyrinae

Medium-sized (30–50 mm wingspan) moths. Most are gray or brown, but also included are the beautiful green species of the genus *Feralia* and the colorful stiriines. The larvae feed on the leaves of trees and shrubs (Amphyrini and Psaphidini) or herbaceous plants, particularly Asteraceae (Stiriini). The group has undergone several reorganizations (Poole 1995; Kitching and Rawlins 1999; Fibiger and Lafontaine 2005; Lafontaine and Schmidt in press) and now includes the Psaphidini, which until very recently (Wagner et al. 2008) was considered a separate subfamily, as were the Stiriini (Poole 1995).

The family Amphipyrinae is Holarctic in distribution, with about 220 species in North America. Eleven species in six genera occur in AB.

**Amphipyrini**

1815 R *Amphipyra pyramidoides* Guenée, 1852 — E Sep — – – g
L: None C: CNC, UASM

1816 R H *Amphipyra tragopoginis* (Clerck, 1759) — E Aug – L Sep — m B –
T: Forbes (1954)
L: None C: CNC, NFRC, OLDS, PMAE, UASM

1817 R *Amphipyra glabella* (Morrison, 1874) — L Jul – E Sep — – – g
T: Franclemont (1941b), Forbes (1954)
L: Franclemont (1941b), Bowman (1951) C: CNC, OLDS, UASM

**Psaphidini**

1817.1 * P *Copivaleria grotei* Morrison, 1874 — ? — – B –
T: Forbes (1954), Poole (1995)

1818 R *Brachionycha borealis* (Smith, 1899) — L Apr – E May — – B g
T: Poole (1995)
L: Bowman (1951), Poole (1995) C: CNC, UASM

1819 R *Feralia jocosa* (Guenée, 1852) — L Apr – E May — M B –
T: Poole (1995)
L: Bowman (1951), Prentice (1962) C: CNC, UASM

1820 R *Feralia major* Smith, 1890 — M AprIL – E May — – B –
T: Poole (1995)
L: None C: CNC, UASM

1821 R *Feralia comstocki* (Grote, 1874) — L Apr – M May — M B –
T: Poole (1995)
L: Bowman (1951), Prentice (1962), Poole (1995) C: CNC, UASM

1822 R *Acopa perpallida* Grote, 1878 — L May – E Sep — – – G
L: Bowman (1951) C: CNC, OLDS, UASM

**Stiriini**

1823 R *Plagiomimicus spumosum* (Grote, 1874) — M Jul – L Jul — – – G
T: Poole (1995)
L: Bowman (1951), Hooper (1991b), Poole (1995) C: UASM

1824 * R *Plagiomimicus expallidus* Grote, 1883 — L Jul – E Sep — – – G
T: Poole (1995)
L: Bowman (1951), Poole (1995) C: CNC, UASM

1825 R *Stiria rugifrons* Grote, 1874 — M Jul – M Aug — – – G

T: Poole (1995)
L: Bowman (1951), Poole (1995) C: CNC, UASM

### 63.9. Oncocnemidinae

Medium-sized (30–50 mm wingspan) moths, mostly gray or brown in color, some with bright yellow hindwings. Adults of most species are nocturnal, but a number of alpine and subalpine species are diurnal, and a number of steppe species may be active both day and night. The Oncocnemidinae were treated as a tribe of the Cuculliinae by Kitching and Rawlins (1999); Fibiger and Lafontaine (2005) have placed them in a separate subfamily, which is the treatment followed here. The subfamily Oncocnemidinae is defined by the following characters: a long narrow vesica with a field of spines on the apical half, a long spinneret, and unusually long setae on the apex of the palps.

The Oncocnemidinae have a Holarctic distribution, but species richness is most notable in the arid parts of western North America. There are about 200 described species in 10 genera in North America, the vast majority in the large genus *Sympistis*. Thirty-nine described species in four genera are reported from AB. A number of species were described by Troubridge and Crabo (1999). Troubridge (2008) realigned the subfamily and transferred the genera *Apharetra*, *Hemistilbia*, *Adita*, *Lepipolys*, *Homoncocnemis, Homohadena* and *Oncocnemis* to *Sympistis,* and described 50 new North American species, three of which occur in Alberta. All species of *Sympistis* were illustrated in color by Troubridge (2008). Most northern species were also treated and illustrated in color in Handfield (1999), and a few western species, including both adults and larvae, were treated and illustrated in color by Miller and Hammond (2000, 2003). The phylogenetic order used for the subfamily here follows Troubridge (2008).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1826 | | R | *Catabena lineolata* Walker, 1865<br>T: Forbes (1954)<br>L: None C: CNC, UASM | M May – L Jul | – | – | G |
| 1827 | * | R | *Pseudacontia crustaria* (Morrison, 1875)<br>L: None C: NFRC, UASM | L Jun | – | – | G |
| 1828 | * | R | *Pleromelloida conserta* (Grote, 1881)<br>L: None C: CNC, OLDS, UASM | M AprIL – L Jun | M | b | g |
| 1829 | * | R | *Pleromelloida bonuscula* (Smith, 1898)<br>L: None C: DAM | L May | – | b | G |
| 1830 | * | R | *Pleromelloida cinerea* (Smith, 1904)<br>L: None C: CNC, UASM | L Aug – E Sep | M | – | – |
| 1831 | * | R | *Sympistis albifasciata* (Hampson, 1906)<br>L: Bowman (1951) C: CNC | Aug | – | – | G |
| 1832 | * | R | *Sympistis saundersiana* (Grote, 1876)<br>T: Forbes (1954)<br>L: None C: BIRD | L Aug – E Sep | – | – | g |
| 1833 | | R | *Sympistis occata* (Grote, 1875) | L May – M Jun | – | – | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951) C: UASM | | | | |
| 1834 | * | U | *Sympistis umbrifascia* (Smith, 1894)<br>L: Crumb (1956) C: Unknown | Jul – Aug | M | – | – |
| 1834.1 | * | P | *Sympistis balteata* (Smith, 1902) | ? | – | – | G |
| 1834.2 | * | P | *Sympistis parvanigra* (Blackmore, 1923) | Jul – Aug | M | – | – |
| 1835 | | R | *Sympistis viriditincta* (Smith, 1894)<br>T: Forbes (1954)<br>L: Bowman (1951) C: UASM | L Aug | – | – | g |
| 1836 | | R | *Sympistis stabilis* (Smith, 1895)<br>L: Bowman (1951), Crumb (1956) C: CNC, OLDS, PMAE, UASM | L Jun – M Aug | – | b | G |
| 1837 | | R | *Sympistis badistriga* (Grote, 1872)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, UASM | M Jul – M Aug | – | B | g |
| 1837.1 | * | P | *Sympistis fifia* (Dyar, 1904) | Jun – Jul | M | – | – |
| 1838 | * | R | *Sympistis dinalda* (Smith, 1908)<br>T: Forbes (1954)<br>L: [Pohl et al. (2004b)] C: CNC, OLDS, PMAE, UASM | E Jul – E Aug | – | b | G |
| 1839 | * | R | *Sympistis glennyi* (Grote, 1873)<br>L: Bowman (1951) C: CNC, UASM | L Jul – L Aug | M | – | – |
| 1840 | * | R | *Sympistis lepipoloides* (McDunnough, 1922)<br>L: Bowman (1951) C: CNC | L Aug | – | – | G |
| 1841 | | R | *Sympistis levis* (Grote, 1880)<br>L: Bowman (1951) C: CNC, UASM | L Aug – E Sep | – | – | G |
| 1842 | * | R | *Sympistis insanina* Troubridge, 2008<br>T: Troubridge (2008)<br>L: [Bowman (1951)], [Hooper (1992)], Troubridge (2008) C: CNC, UASM | L Aug – E Sep | – | – | G |
| 1843 | | R | *Sympistis poliochroa* (Hampson, 1906)<br>L: Bowman (1951) C: CNC, PMAE, UASM | E Aug – M Sep | M | b | G |
| 1844 | * | R | *Sympistis mackiei* (Barnes and Benjamin, 1924)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M Aug – M Sep | – | b | G |
| 1845 | | R | *Sympistis cibalis* (Grote, 1880)<br>L: Bowman (1951) C: CNC, OLDS, UASM | E Aug – L Sep | m | b | G |
| 1846 | | R | *Sympistis regina* (Smith, 1902)<br>L: Bowman (1951) C: CNC, UASM | L Aug – E Sep | – | – | G |
| 1847 | | R | *Sympistis augustus* (Harvey, 1875)<br>L: Bowman (1951) C: CNC, UASM | M Aug – L Sep | – | b | G |
| 1848 | * | R | *Sympistis sandaraca* (Buckett and Bauer, 1967)<br>L: [Bowman (1951)] C: CNC, UASM | L Aug – L Sep | M | – | – |
| 1849 | * | R | *Sympistis pudorata* (Smith, 1893) | Jul | M | – | – |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951) C: CNC | | | | | |
| 1850 | * | R | *Sympistis amun* Troubridge, 2008 | L Jun – M Jul | M | – | – |
| | | | T: Troubridge (2008) | | | | |
| | | | L: Troubridge (2008) C: CNC, UASM | | | | |
| 1851 | * | R | *Sympistis chons* Troubridge, 2008 | L Jun – M Jul | m | b | G |
| | | | T: Troubridge (2008) | | | | |
| | | | L: [Bowman (1951)], Troubridge (2008) C: CNC, UASM | | | | |
| 1852 | * | R | *Sympistis riparia* (Morrison, 1875) | M Jun – L Jul | – | b | G |
| | | | T: McDunnough (1941), Forbes (1954), Troubridge and Crabo (1999) | | | | |
| | | | L: Bowman (1951), Troubridge (2008) C: CNC, OLDS, UASM | | | | |
| 1853 | * | R | *Sympistis chionanthi* (Smith, 1797) | M Jul – M Sep | m | b | G |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: CNC, OLDS, UASM | | | | |
| 1854 | | R | *Sympistis barnesii* (Smith, 1899) | Sep – E Oct | M | – | – |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 1855 | * | R | *Sympistis chalybdis* (Troubridge and Crabo, 1999) | E Aug – L Sep | M | b | – |
| | | | T: Troubridge and Crabo (1999) | | | | |
| | | | L: Troubridge and Crabo (1999) C: UASM | | | | |
| 1856 | * | R | *Sympistis piffardi* (Walker, 1862) | M Aug | – | b | g |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 1857 | * | R H | *Sympistis funebris* (Hübner, [1809]) | L Jul – E Aug | M | – | – |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: CNC | | | | |
| 1858 | * | R | *Sympistis dentata* (Grote, 1875) | E Jul – L Aug | m | B | g |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 1859 | * | R | *Sympistis anweileri* Troubridge and Lafontaine, 2008 | Jul – Aug | M | – | – |
| | | | T: Troubridge (2008) | | | | |
| | | | L: [Bowman (1951)], Troubridge (2008) C: CNC, UASM | | | | |
| 1860 | * | R | *Sympistis extremis* (Smith, 1890) | M Aug | M | – | – |
| | | | T: Troubridge and Crabo (1999) | | | | |
| | | | L: None C: CNC, UASM | | | | |
| 1861 | * | R | *Sympistis wilsoni* Barnes and Benjamin, 1924 | M Jul | M | – | – |
| | | | L: None C: CNC, G. J. Hilchie collection | | | | |
| 1862 | * | R H | *Sympistis heliophila* (Paykull, 1793) | E Jul – E Aug | M | B | – |
| | | | L: None C: CNC, UASM | | | | |
| 1863 | * | R H | *Sympistis nigrita* (Boisduval, 1840) | L Jun – L Aug | M | – | – |
| | | | T: Forbes (1954) | | | | |

L: Bowman (1951) C: CNC, UASM

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1863.1 | * | P | *Sympistis dayi* (Grote, 1873) | L Aug | m | – | G |
| 1864 | * | R | *Sympistis pallidior* (Barnes, 1928)<br>T: Troubridge and Crabo (1999)<br>L: [Bowman (1951)] C: CNC, OLDS, UASM | M Jun – M Jul | – | b | G |

### *63.10. Agaristinae – foresters*

Medium-sized (30–40 mm wingspan), brightly colored, predominantly diurnal moths with brightly colored larvae. Adults of many species are capable of sound production, which appears to be involved in courtship.

About 300 species of agaristines are known globally, mostly from tropical regions. Twenty-seven species in 12 genera occur in North America; three species are known in AB. The group has not been revised recently but is well defined phylogenetically (Kitching and Rawlins 1999).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1865 | | R | *Alypia langtoni* Couper, 1865<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, PMAE, UASM | M May – E Jul | M | B | g |
| 1866 | * | R | *Alypia ridingsii* Grote, 1865<br>L: None C: UASM | Jun – Jul | M | – | – |
| 1867 | | R | *Androloma maccullochii* (Kirby, 1837)<br>L: Bowman (1951), Crumb (1956) C: CNC, PMAE, UASM | M Jun – M Jul | M | b | – |

### *63.11. Condicinae*

Medium-sized (30–50 mm wingspan) moths. The subfamily is divided into two tribes, Condicini and Leuconyctini, both of which were defined in detail by Poole (1995). Both are defined mainly by characters of the male and female genitalia, as well as larval setal patterns. Larval host plants are mostly members of Asteraceae.

This family is most diverse in the tropics. The North American fauna contains some 54 species in 11 genera; four species in three genera occur in AB. The subfamily has not been revised at the species level, and the large genus *Condica* in particular is badly in need of revision.

**Condicini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1868 | | R | *Condica videns* (Guenée, 1852)<br>T: Forbes (1954)<br>L: None C: CNC, OLDS, UASM | E Jul – M Aug | – | b | g |
| 1869 | * | R | *Condica discistriga* (Smith, 1894)<br>L: None C: CNC, UASM | L Jun | – | – | G |

**Leuconyctini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1870 | * | R | *Crambodes talidiformis* Guenée, 1852<br>T: Forbes (1954)<br>L: Bowman (1951), Hooper (1991b) C: CNC, UASM | L Jul – L Aug | – | – | G |
| 1871 | | R | *Leuconycta lepidula* (Grote, 1874)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | M Jun – M Jul | – | b | G |

### 63.12. Heliothinae – flower moths

Small to medium-sized (20–50 mm wingspan) moths, many with brightly colored wings. The group is defined mainly by larval characters. The adults of many species are active during the day, others are nocturnal, and a few are active both day and night. The adults of many species roost on the larval host plant, in some cases within its flowers. Larvae feed on the reproductive parts of the host plant (sepals, flowers, and seeds). A few, such as the Corn Earworm (*Helicoverpa zea*), are among the most destructive lepidopteran agricultural pests in temperate regions.

Members of the Heliothinae are distributed worldwide. About 154 species in 14 genera occur in North America; 23 species in six genera occur in AB. The North American fauna was revised at the generic level by Hardwick (1970b), and at the species level by Hardwick (1958, 1965, 1994). Most recently, he reviewed the North American fauna and illustrated the adults and larvae in color in a self-published monograph (Hardwick 1996).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1872 | | R | *Eutricopis nexilis* Morrison, 1875<br>T: Hardwick (1996)<br>L: Bowman (1951), Hardwick (1996) C: CNC, UASM | M May – E Aug | M | – | G |
| 1873 | * | R H | *Pyrrhia exprimens* (Walker, 1857)<br>T: Hardwick (1996)<br>L: [Bowman (1951)], [Crumb (1956)], [Prentice (1962)], Hardwick (1996) C: CNC, NFRC, OLDS, PMAE, UASM | L May – M Jul | M | B | g |
| 1874 | * | M | *Helicoverpa zea* (Boddie, 1850)<br>Corn Earworm<br>T: Hardwick (1965, 1996)<br>L: Bowman (1951), ?Hardwick (1996) C: CNC, UASM | L Aug – E Sep | – | – | G |
| 1875 | * | R | *Heliothis phloxiphaga* Grote and Robinson, 1867<br>T: Hardwick (1994, 1996)<br>L: Bowman (1951), Crumb (1956), ?Hardwick (1996) C: CNC, NFRC, OLDS, PMAE, UASM | M May – E Sep (2Br?) | M | b | G |
| 1876 | * | R | *Heliothis acesias* Felder and Rogenhofer, 1875 | ? | – | – | G |

T: Hardwick (1994, 1996)
L: Hardwick (1994, 1996) C: CNC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1877 | | R H | *Heliothis ononis* (Fabricius, 1787)<br>Flax Bollworm<br>T: Hardwick (1996)<br>L: Bowman (1951), Hardwick (1996) C: CNC, NFRC, OLDS, PMAE, UASM | L May – M Jul | m | b | G |
| 1878 | | R | *Heliothis oregonica* (Edwards, 1875)<br>T: Hardwick (1996)<br>L: Bowman (1951), Hardwick (1996) C: CNC, NFRC, OLDS, PMAE, UASM | L May – E Jul | M | b | G |
| 1879 | | R | *Heliothis borealis* (Hampson, 1903)<br>T: Hardwick (1996)<br>L: Bowman (1951), Hardwick (1996) C: CNC, UASM | E May – M Jun | M | B | – |
| 1880 | * | R | *Schinia nuchalis* (Grote, 1878)<br>T: Hardwick (1996)<br>L: [Bowman (1951)], [?Hardwick (1996)] C: CNC | Jul | – | – | G |
| 1881 | | R | *Schinia jaguarina* (Guenée, 1852)<br>T: Hardwick (1996)<br>L: Bowman (1951), Hardwick (1996) C: CNC, OLDS, UASM | L Jul – L Aug | – | b | G |
| 1882 | | R | *Schinia suetus* (Grote, 1873)<br>T: Hardwick (1958, 1996)<br>L: Hardwick (1996) C: CNC, UASM | M Jul | – | – | G |
| 1883 | | R | *Schinia meadi* (Grote, 1873)<br>T: Hardwick (1996)<br>L: Bowman (1951), Hardwick (1996) C: CNC, NFRC, OLDS, UASM | M Jun – E Aug | – | – | G |
| 1884 | | R | *Schinia florida* (Guenée, 1852)<br>T: Hardwick (1996)<br>L: Bowman (1951), Crumb (1956), Hardwick (1996) C: CNC, NFRC, UASM | E Jun – L Jul | – | B | G |
| 1885 | | R | *Schinia gaurae* (Smith, 1797)<br>T: Hardwick (1996)<br>L: Bowman (1951), Hardwick (1996) C: CNC, UASM | L Jul – M Aug | – | – | G |
| 1886 | | R | *Schinia honesta* (Grote, 1881)<br>T: Hardwick (1958, 1996)<br>L: None C: UASM | M Jul | M | – | – |
| 1887 | * | R | *Schinia verna* Hardwick, 1983<br>Verna's Flower Moth<br>T: Hardwick (1983) | L May – E Jun | – | – | G |

L: COSEWIC (2005) C: UASM

1888 R *Schinia villosa* (Grote, 1864) M Jul – L Jul m – G
T: Hardwick (1958, 1996)
L: Bowman (1951), Crumb (1956), Hardwick (1996) C: CNC, UASM

1889 R *Schinia persimilis* (Grote, 1873) M Jun – L Aug M b G
T: Hardwick (1958, 1996)
L: Bowman (1951), Hardwick (1958, 1996) C: UASM

1890 * R *Schinia roseitincta* (Harvey, 1875) Jun – – G
T: Hardwick (1996)
L: None C: UASM

1891 * R *Schinia acutilinea* (Grote, 1878) E – L Aug – – G
T: Hardwick (1996)
L: Bowman (1951), Hardwick (1996) C: CNC, OLDS, UASM

1892 R *Schinia cumatilis* (Grote, 1865) M Jul – M Aug m – G
T: Hardwick (1996)
L: Bowman (1951), Hardwick (1996) C: CNC, NFRC, OLDS, UASM

1893 * R *Schinia avemensis* (Dyar, 1904) L Jul – M Aug – – G
Gold-edged Gem
T: Hardwick (1958, 1996)
L: COSEWIC (2006) C: CNC, UASM

1894 * R *Melaporphyria immortua* Grote, 1874 L May – B g
Dark-banded Flower Gem
T: Hardwick (1996)
L: Bowman (1951) C: CNC, UASM

### 63.13. Bryophilinae

A small group of small to medium-sized (25–35 mm wingspan), lichen-mimic moths. Until recently, they were placed in the Acronictinae. Eggs are laid on rocks or walls near the lichens upon which the larvae feed. Larvae overwinter in silk-lined burrows, and pupation takes place in blisterlike cocoons of silk and lichen fragments.

There are 13 species in a single genus (*Cryphia*) in North America; the North American species do not belong in the Eurasian genus *Cryphia* but are provisionally maintained therein pending revision (Lafontaine and Schmidt in press). Two species occur in AB.

1895 * R *"Cryphia" olivacea* (Smith, 1891) L Jul M – –
L: None C: CNC, UASM

1896 * R *"Cryphia" cuerva* (Barnes, 1907) L Jul M – –
L: None C: CNC

### 63.14. Noctuinae

Small to medium-sized (15–60 mm wingspan) moths, mostly drably colored with a typical 'noctuiform' build – the forewings are elongate-triangular and held roof-like or flat and overlapping at rest, and the hindwings usually lack well defined markings. The subfamily is defined by a suite of structural characters (see e.g., Fibiger and Lafontaine 2005). It is a large group and includes much of what was previously included in the subfamilies Amphipyrinae and Hadeninae; most species of the old concept of Amphipyrinae have been transferred to the tribes Apameini and Xylenini, while the former Hadeninae have been relegated to several tribes including Hadenini. In North America, the subfamily is made up of some 1500 species; 468 species are reported from AB.

The Apameini, Xylenini, Hadenini, Eriopygini and Noctuini are the largest tribes in the subfamily, and include most of the noctuoid species of economic importance. The larvae of many species of Apameini bore into and feed within the stems and roots of the host plant. The largest genera are *Apamea* and *Papaipema*, both with more than 40 North American species, although *Papaipema* is poorly represented in the West. Most of the Xylenini fly late in the season, with some genera (e.g., *Lithophane, Eupsilia*) overwintering as adults. *Lithophane* includes over 50 North American species. The Hadenini includes 121 North American species, particularly dominant in dry, grasslands and steppe habitats (particularly *Anarta* and *Scotogramma*). The *Polia* group of genera, which includes pest species such as the Bertha Armyworm (*Mamestra configurata*), was revised by McCabe (1980). Eriopygini includes two particularly large and taxonomically difficult genera that are diverse in the West, *Lacinipolia* and *Lasionycta*, the latter of which was recently revised (Crabo and Lafontaine 2009). The Noctuini are dull-colored moths of moderate size, and at rest their wings lie in a characteristically flat and overlapping manner, so that the costa parallels the centerline. Males of most species lack basal abdominal brush organs, and first-instar larvae have clubbed setae on sclerotized pinacula. Larvae of the subfamily are cutworms that are generally polyphagous on herbaceous angiosperms, with later-instar larvae hiding by day in soil or under vegetation, emerging to feed after dark. Many noctuines are serious agricultural pests. The tribe is divided into two large subtribes (previously as tribes): the Agrotina, with origins in South America, and the Noctuina, with a primarily northern Holarctic steppe distribution. There are approximately 500 species of Noctuini in North America (including a number of undescribed species) in about 45 genera. A total of 197 species in 36 genera are reported here for AB, including 86 species in the large genus *Euxoa*.

Generic revisions of Noctuinae include *Anarta* (Mustelin 2006), *Apamea* (Mikkola et al. 2009), *Coranarta* (Lafontaine et al. 1987a; Yela 2002), *Brachylomia* (Troubridge and Lafontaine 2007), *Cosmia* (Lafontaine and Troubridge 2003), *Elaphria* (Saluke and Pogue 2000; Pogue and Sullivan 2003), *Enargia* (Schmidt in press), *Hadena* (Hacker 1996; Troubridge and Crabo 2002), *Hyppa* (Troubridge and Lafontaine 2004), *Lasionycta* (Crabo and Lafontaine 2009), *Mesogona* (Crabo and Hammond 1997), *Nedra* (Clarke 1940), *Neoligia* (Troubridge and Lafontaine 2002), *Spodoptera* (Todd and Poole 1980), and *Stretchia* (McDunnough 1949). The North American Noctuini were recently revised in three volumes of the *Moths of North America* series (Lafontaine 1987, 1998, 2004). AB records from older works on the Noctuinae, particularly in the genus

*Euxoa*, are not comprehensively listed here, because they are superseded by Lafontaine's works. Many of the genera of Noctuinae are still in need of taxonomic revision.

**Pseudeustrotiini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1897 | | R | *Pseudeustrotia carneola* (Guenée, 1852)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | M May – M Aug | – | b | G |
| 1898 | | R | *Anterastria teratophora* (Herrich-Schäffer, [1854])<br>T: Forbes (1954), Ferguson (1988)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | L May – L Jun | – | b | g |

**Prodeniini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1899 | * | R | *Spodoptera praefica* (Grote, 1875)<br>T: Todd and Poole (1980)<br>L: None C: CNC, UASM | M Aug – E Sep | – | – | G |

**Elaphriini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1900 | * | R | *Elaphria alapallida* Pogue and Sullivan, 2003<br>T: Saluke and Pogue (2000), Pogue and Sullivan (2003)<br>L: [Bowman (1951)], [Saluke and Pogue (2000)], Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L May – L Jun | – | B | g |

**Caradrini**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1901 | * | R | *Protoperigea anotha* (Dyar, 1904)<br>L: Bowman (1951) C: CNC, UASM | L Jun – L Aug | M | – | – |
| 1902 | * | R | *Protoperigea posticata* (Harvey, 1875)<br>L: None C: UASM | E Sep | – | – | G |
| 1903 | * | R I | *Caradrina morpheus* (Hufnagel, 1766)<br>L: None C: CNC, UASM | E Jun – M Jul | – | b | G |
| 1904 | | R | *Caradrina meralis* (Morrison, 1875)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | L Jul – E Sep | – | b | G |
| 1905 | * | R H | *Caradrina montana* (Bremner, 1861)<br>T: Forbes (1954), Kononenko et al. (1989)<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Sep | M | B | G |
| 1906 | * | R | *Proxenus miranda* (Grote, 1873)<br>T: Forbes (1954), Kononenko et al. (1989)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – M Jul | M | B | G |
| 1907 | * | R | *Proxenus mendosa* McDunnough, 1927<br>T: Kononenko et al. (1989) | L May – L Aug | M | – | G |

L: None C: CNC, OLDS, PMAE, UASM

**Dypterygiini**

1908 R *Trachea delicata* (Grote, 1874) M Jun – M Aug – b G
T: Forbes (1954)
L: Bowman (1951) C: CNC, OLDS, UASM

**Phlogophorini**

1909 R *Euplexia benesimilis* McDunnough, 1922 L May – M Jul M B –
T: Forbes (1954)
L: Bowman (1951), Crumb (1956), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

1910 R *Phlogophora periculosa* Guenée, 1852 M Jul – E Aug – B g
T: Forbes (1954)
L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

**Actinotiini**

1910.1 * P *Nedra hoeffleri* (Clarke, 1940) Jul M – –
T: Clarke (1940)

**Apameini**

1910.2 * P *Apamea verbascoides* (Guenée, 1852) Jun – Aug? – B g
T: Mikkola et al. (2009)

1911 R *Apamea cariosa* (Guenée, 1852) L Jun – M Jul – – G
T: Mikkola et al. (2009)
L: Mikkola et al. (2009) C: CNC, UASM

1912 * R *Apamea vultuosa* (Grote, 1875) L Jun – L Jul M B g
T: Mikkola et al. (2009)
L: Bowman (1951), Mikkola et al. (2009) C: CNC, OLDS, PMAE, UASM

1913 R *Apamea plutonia* (Grote, 1883) E – L Jul m B –
T: Mikkola et al. (2009)
L: Bowman (1951), Crumb (1956), Mikkola et al. (2009) C: CNC, UASM

1914 * R *Apamea alia* (Guenée, 1852) M Jun – L Jul m B –
T: Mikkola et al. (2009)
L: Bowman (1951), Crumb (1956), Mikkola et al. (2009) C: CNC, OLDS, UASM

1915 * R H *Apamea indocilis* (Walker, 1856) M Jun – M Jul m B –
T: Mikkola et al. (2009)

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| | | | L: Bowman (1951), Crumb (1956), Mikkola et al. (2009) C: CNC, OLDS, UASM | | | | |
| 1916 | | R | *Apamea impulsa* (Guenée, 1852)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Mikkola et al. (2009) C: CNC, OLDS, UASM | L Jul – E Aug | m | b | – |
| 1917 | * | R | *Apamea unita* (Smith, 1904)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Mikkola et al. (2009) C: AMNH | Jun | m | b | – |
| 1918 | * | R H | *Apamea sordens* (Hufnagel, 1766)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Crumb (1956), Mikkola et al. (2009) C: CNC, NFRC, OLDS, PMAE, UASM | M May – L Jun | – | b | G |
| 1919 | * | R | *Apamea inordinata* (Morrison, 1875)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Mikkola et al. (2009) C: CNC, OLDS, PMAE, UASM | E Jun – M Jul | m | – | G |
| 1920 | | R | *Apamea spaldingi* (Smith, 1909)<br>T: Mikkola et al. (2009)<br>L: Mikkola et al. (2009) C: CNC, OLDS, UASM | M May – M Jun | m | – | G |
| 1921 | * | R | *Apamea lignicolora* (Guenée, 1852)<br>T: Mikkola et al. (2009)<br>L: Mikkola et al. (2009) C: CNC, UASM | M Jun – L Jul | – | b | G |
| 1922 | * | R | *Apamea antennata* (Smith, 1891)<br>T: Mikkola et al. (2009)<br>L: Mikkola et al. (2009) C: CNC, UASM | E Jul | M | – | – |
| 1922.1 | * | P | *Apamea atrosuffusa* (Barnes and McDunnough, 1913)<br>T: Mikkola et al. (2009) | Aug | M | – | G |
| 1923 | * | R | *Apamea sora* (Smith, 1903)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Mikkola et al. (2009) C: CNC, UASM | E Jul – L Aug | M | – | – |
| 1924 | * | R | *Apamea commoda* (Walker, 1857)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Pohl et al. (2004b), Mikkola et al. (2009) C: CNC, NFRC, OLDS, UASM | E Jun – E Aug | M | B | G |
| 1925 | * | R | *Apamea centralis* (Smith, 1891)<br>T: Mikkola et al. (2009)<br>L: Mikkola et al. (2009) C: UASM | E Jul | M | – | – |
| 1926 | | R | *Apamea occidens* (Grote, 1878)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Crumb (1956), Hooper (1991b), Mikkola et al. (2009) C: CNC, UASM | L Jun | – | – | G |

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| 1927 | * | R | *Apamea amputatrix* (Fitch, 1857)<br>Yellow-headed Cutworm Moth<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Crumb (1956), Mikkola et al. (2009) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – E Aug | M | B | G |
| 1927.1 | * | P | *Apamea acera* (Smith, 1900)<br>T: Mikkola et al. (2009) | Jul | M | – | G |
| 1928 | * | R | *Apamea burgessi* (Morrison, 1874)<br>T: Mikkola et al. (2009)<br>L: Hooper (1991b), Mikkola et al. (2009) C: CNC, UASM | L Aug – E Sep | – | – | G |
| 1929 | | R | *Apamea longula* (Grote, 1879)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Mikkola et al. (2009) C: CNC, OLDS, UASM | E Aug – E Sep | – | – | G |
| 1930 | * | R | *Apamea scoparia* Mikkola, Mustelin and Lafontaine, 2000<br>T: Mikkola et al. (2009)<br>L: [Bowman (1951)], Mikkola et al. (2009) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – E Aug | M | B | G |
| 1931 | * | R | *Apamea cogitata* (Smith, 1891)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Crumb (1956), Pohl et al. (2004b), Mikkola et al. (2009) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – M Aug | m | B | G |
| 1932 | * | R | *Apamea inficita* (Walker, 1857)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Mikkola et al. (2009) C: CNC, NFRC, OLDS, UASM | M Jul – L Aug | m | b | G |
| 1932.1 | * | P | *Apamea lutosa* (Andrews, 1877)<br>T: Mikkola et al. (2009) | Jun – Jul? | – | – | G |
| 1933 | | R | *Apamea devastator* (Brace, 1819)<br>Glassy Cutworm Moth<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Crumb (1956), Mikkola et al. (2009) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – M Sep | M | b | G |
| 1934 | * | R H | *Apamea zeta* (Treitschke, 1825)<br>T: T: Mikkola et al. (2009)<br>L: Bowman (1951), Mikkola et al. (2009) C: CNC, OLDS, UASM | E Jul – L Aug | M | – | – |
| 1935 | * | R | *Apamea contradicta* (Smith, 1895)<br>T: Mikkola et al. (2009) | M Jun – L Jul | M | B | g |

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| | | | L: Bowman (1951), Mikkola et al. (2009) C: CNC, OLDS, PMAE, UASM | | | | |
| 1936 | * | R | *Apamea niveivenosa* (Grote, 1879)<br>T: Mikkola et al. (2009)<br>L: Bowman (1951), Mikkola et al. (2009) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – M Aug | m | b | G |
| 1937 | * | R | *Lateroligia ophiogramma* (Esper, 1793)<br>T: Troubridge et al. (1992), Mikkola and Lafontaine (1994), Mikkola et al. (2009)<br>L: None C: UASM | Jul | – | b | g |
| 1938 | | R | *Resapamea passer* (Guenée, 1852)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956) C: CNC, OLDS, UASM | M Jun – M Aug | m | B | G |
| 1939 | * | R | *Eremobina claudens* (Walker, 1857)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, PMAE, UASM | E Aug – L Sep | m | B | – |
| 1940 | * | R | *Eremobina leucoscelis* (Grote, 1874)<br>T: Forbes (1954)<br>L: None C: CNC, UASM | E Aug – L Sep | – | B | g |
| 1940.1 | * | P | *Oligia modica* (Guenée, 1852)<br>T: Forbes (1954) | L Jul – E Aug | – | b | g |
| 1941 | | R | *Oligia fractilinea* (Grote, 1874)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | M Jul – L Aug | – | – | G |
| 1942 | * | R | *Oligia rampartensis* Barnes and Benjamin, 1923<br>L: [Bowman (1951)] C: CNC, NFRC, PMAE, UASM | L Jul – E Sep | M | – | – |
| 1943 | | R | *Oligia egens* (Walker, 1857)<br>L: Bowman (1951) C: CNC, PMAE, UASM | L Jul – M Sep | m | b | g |
| 1943.1 | * | P | *Oligia obtusa* (Smith, 1902)<br>T: Forbes (1954) | ? | – | – | G |
| 1944 | | R | *Oligia mactata* (Guenée, 1852)<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | M Aug – M Sep | m | B | g |
| 1945 | | R | *Oligia illocata* (Walker, 1857)<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | M Aug – M Sep | – | B | g |
| 1946 | * | R | *Neoligia subjuncta* (Smith, 1898) | L Jun – E Aug | M | b | G |

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| | | | T: Troubridge and Lafontaine (2002) | | | | |
| | | | L: Bowman (1951), Troubridge and Lafontaine (2002) C: CNC, PMAE, UASM | | | | |
| 1947 | * | R | *Neoligia tonsa* (Grote, 1880) | Aug | M | – | G |
| | | | T: Troubridge and Lafontaine (2002) | | | | |
| | | | L: Troubridge and Lafontaine (2002) C: CNC | | | | |
| 1948 | * | R | *Neoligia lillooet* Troubridge and Lafontaine, 2002 | M Aug | M | – | – |
| | | | T: Troubridge and Lafontaine (2002) | | | | |
| | | | L: None C: UASM | | | | |
| 1949 | * | R | *Neoligia invenusta* Troubridge and Lafontaine, 2002 | E Sep | M | – | – |
| | | | T: Troubridge and Lafontaine (2002) | | | | |
| | | | L: None C: UASM | | | | |
| 1949.1 | * | P | *Xylomoia chagnoni* Barnes and McDunnough, 1917 | L Jul | – | b | g |
| 1950 | * | R | *Photedes includens* (Walker, 1858) | M Jul – M Sep | – | b | G |
| | | | L: Bowman (1951) C: CNC, PMAE, UASM | | | | |
| 1951 | * | R | *Photedes inops* (Grote, 1881) | E Aug – E Sep | – | – | G |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 1952 | * | R | *Photedes panatela* (Smith, 1904) | L Jun – M Jul | – | b | g |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: UASM | | | | |
| 1953 | * | R | *Photedes didonea* (Smith, 1894) | L Jul – E Sep | – | – | G |
| | | | T: Mikkola (1998) | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 1954 | * | R | *Hypocoena inquinata* (Guenée, 1852) | E Jul – M Aug | m | B | g |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: CNC, NFRC, UASM | | | | |
| 1955 | * | R | *Hypocoena basistriga* (McDunnough, 1933) | E Aug – M Sep | m | B | g |
| | | | L: Bowman (1951) C: CNC, NFRC, UASM | | | | |
| 1956 | | R | *Hypocoena rufostrigata* (Packard, 1867) | L Jun – L Aug | M | B | G |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: CNC, NFRC, UASM | | | | |
| 1957 | * | R | *"Photedes" defecta* (Grote, 1874) | L Jul – L Sep | – | b | G |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: CNC, UASM | | | | |
| 1958 | * | R | *Capsula oblonga* (Grote, 1882) | L Aug | – | – | G |
| | | | T: Forbes (1954) | | | | |
| | | | L: None C: CNC, UASM | | | | |
| 1959 | | R | *Capsula subflava* (Grote, 1882) | E Aug – M Sep | m | b | G |
| | | | T: Forbes (1954) | | | | |
| | | | L: Bowman (1951) C: CNC, PMAE, UASM | | | | |
| 1960 | * | R | *Helotropha reniformis* (Grote, 1874) | E Aug – L Sep | – | B | G |

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| | | | T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956) C: CNC, UASM | | | | |
| 1961 | * | R | *Amphipoea interoceanica* (Smith, 1899)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | E Aug – E Sep | – | B | G |
| 1962 | * | R | *Amphipoea americana* (Speyer, 1875)<br>T: Forbes (1954)<br>L: Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | L Jul – L Sep | m | B | g |
| 1963 | | R | *Papaipema harrisii* (Grote, 1881)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, PMAE, UASM | M Aug – L Sep | – | b | G |
| 1964 | * | R | *Papaipema birdi* (Dyar, 1908)<br>L: [Bowman (1951)] C: CNC, UASM | L Aug – L Sep | – | B | – |
| 1965 | * | R | *Papaipema maritima* Bird, 1909<br>L: None C: UASM | E Oct | – | – | G |
| 1966 | * | R | *Papaipema unimoda* (Smith, 1894)<br>L: Bowman (1951), Crumb (1956) C: CNC, UASM | L Aug – M Sep | – | b | g |
| 1967 | * | R | *Hydraecia pallescens* Smith, 1899<br>L: Bowman (1951) C: CNC, UASM | E Sep – E Oct | M | – | G |
| 1968 | | R | *Hydraecia perobliqua* Hampson, 1910<br>L: Bowman (1951) C: CNC, UASM | L Jul – L Sep | – | b | G |
| 1969 | * | R | *Hydraecia intermedia* Barnes and Benjamin, 1924<br>L: Bowman (1951) C: CNC | Aug | m | – | G |
| **Arzamini** | | | | | | | |
| 1970 | * | R | *Bellura gortynoides* Walker, 1865<br>T: Forbes (1954)<br>L: Bowman (1951) C: UASM | E Jul | – | B | – |
| 1971 | | R | *Bellura obliqua* (Walker, 1865)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | L May – M Jul | – | B | g |
| **Xylenini** | | | | | | | |
| 1972 | * | R | *Hyppa contrasta* McDunnough, 1946<br>T: Troubridge and Lafontaine (2004)<br>L: [Bowman (1951)], Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L May – M Jul | M | B | – |
| 1973 | * | R | *Hyppa brunneicrista* Smith, 1902<br>T: Troubridge and Lafontaine (2004)<br>L: Bowman (1951), Crumb (1956), Troubridge and Lafontaine (2004) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Jul | M | – | – |
| 1974 | | R | *Hyppa indistincta* Smith, 1894 | L Jun – L Jul | M | b | – |

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| | | | T: Troubridge and Lafontaine (2004)<br>L: Bowman (1951), Troubridge and Lafontaine (2004) C: CNC, UASM | | | | |
| 1975 | | R | *Xylena nupera* (Lintner, 1874)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, OLDS, UASM | E May – M May; L Aug – L Oct (H) | m | B | G |
| 1976 | | R | *Xylena curvimacula* (Morrison, 1874)<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Apr – E May; E Sep – L Oct (H) | m | B | g |
| 1977 | | R | *Xylena thoracica* (Putnam-Cramer, 1886)<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, OLDS, UASM | M Apr – E Jun; L Aug – M Oct (H) | M | B | g |
| 1978 | | R | *Xylena cineritia* Grote, 1875<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, OLDS, UASM | E Apr – L May; L Sep – E Oct (H) | M | B | g |
| 1979 | * | U H | *Xylena brucei* (Smith, 1892)<br>L: Crumb (1956) C: Unknown | Sep; Apr (H) | M | – | – |
| 1980 | * | R | *Lithomoia germana* Morrison, 1875<br>T: Forbes (1954)<br>L: [Bowman (1951)], [Prentice (1962)], Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Aug – L Sep | m | B | g |
| 1981 | | R | *Homoglaea hircina* Morrison, 1876<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Mar – M May; L Sep – M Oct (H) | M | B | g |
| 1982 | | R | *Homoglaea carbonaria* (Harvey, 1876)<br>L: Bowman (1951), Prentice (1962), Hooper (1992) C: CNC, NFRC, UASM | L Apr – M May; M Sep – L Oct (H) | M | B | – |
| 1983 | | R | *Litholomia napaea* (Morrison, 1874)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Apr – L May; L Aug – E Oct (H) | M | B | g |
| 1983.1 | * | P | *Lithophane bethunei* (Grote and Robinson, 1968)<br>T: Forbes (1954) | ? | – | B | – |
| 1984 | | R | *Lithophane innominata* (Smith, 1893)<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, OLDS, PMAE, UASM | L Mar – E Jun; L Aug – M Oct (H) | M | B | g |

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| 1985 | * | R | *Lithophane petulca* Grote, 1874<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E Apr – E May; L Aug – M Oct (H) | M | B | – |
| 1986 | | R | *Lithophane amanda* Smith, 1900<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, OLDS, UASM | L Apr – L May; E Sep – E Oct (H) | M | B | g |
| 1987 | * | R | *Lithophane disposita* (Morrison, 1874)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | M Apr – E May; M Sep (H) | – | B | – |
| 1988 | | R | *Lithophane tepida* Grote, 1874<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, OLDS, UASM | M Apr – L May; L Aug – M Sep (H) | – | B | – |
| 1989 | | R | *Lithophane georgii* Grote, 1875<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Prentice (1962) C: CNC, NFRC, OLDS, UASM | M Apr – L Apr; L Sep – E Oct (H) | M | B | g |
| 1989.1 | * | P | *Lithophane laticinerea* Grote, 1874<br>T: Forbes (1954) | Apr – May; Sep – Oct (H) | – | – | G |
| 1990 | * | R | *Lithophane unimoda* (Lintner, 1878)<br>T: Forbes (1954)<br>L: None C: UASM, CNC | M Apr – E May; E Sep (H) | – | b | g |
| 1991 | | R | *Lithophane fagina* Morrison, 1874<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, OLDS, UASM | M Apr – E May; M Sep – E Oct (H) | m | B | g |
| 1992 | | R | *Lithophane pexata* Grote, 1874<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | E Apr – E Jun; M Sep – E Oct (H) | m | B | – |
| 1993 | * | R | *Lithophane adipel* (Benjamin, 1936)<br>T: Forbes (1954)<br>L: None C: UASM | M Apr | – | B | – |
| 1994 | | R | *Lithophane thaxteri* Grote, 1874<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, UASM | L Apr – E Jun; M Aug – L Sep (H) | – | B | – |
| 1995 | * | R i? | *Eupsilia vinulenta* (Grote, 1864)<br>T: Forbes (1954)<br>L: Prentice (1962) C: CNC, NFRC, OLDS, UASM | L Mar – M May; L Sep – E Oct (H) | – | b | G |

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| 1996 | | R | *Eupsilia tristigmata* (Grote, 1877)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Ives and Wong (1988) C: CNC, NFRC, OLDS, UASM | L Mar – E May;<br>M Sep – E Oct (H) | – | B | G |
| 1997 | | R | *Eupsilia devia* (Grote, 1875)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, UASM | E Apr – E May;<br>M Sep – E Oct (H) | – | B | g |
| 1998 | * | R | *Epiglaea decliva* (Grote, 1874)<br>T: Forbes (1954)<br>L: None C: CNC | L Sep – M Oct | – | – | G |
| 1999 | | R | *Eucirroedia pampina* (Guenée, 1852)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | M Aug – M Sep | m | b | G |
| 2000 | * | R | *Mesogona olivata* (Harvey, 1874)<br>T: Crabo and Hammond (1997)<br>L: Bowman (1951) C: CNC, UASM | L Aug | M | – | – |
| 2001 | * | R | *Sunira bicolorago* (Guenée, 1852)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, PMAE, UASM | M Sep – M Oct | – | b | G |
| 2002 | | R | *Sunira verberata* (Smith, 1904)<br>L: Bowman (1951), Crumb (1956) C: CNC, UASM | L Aug – L Sep | M | B | g |
| 2003 | | R | *Anathix puta* (Grote and Robinson, 1868)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, NFRC, UASM | E Aug – M Sep | M | B | G |
| 2004 | | R | *Anathix aggressa* (Smith, 1907)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956) C: CNC, UASM | L Aug – M Sep | – | b | G |
| 2005 | * | R | *Xanthia tatago* Lafontaine and Mikkola, 2003<br>T: Lafontaine and Mikkola (2003)<br>L: [Bowman (1951)], Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | E Aug – L Sep | M | B | g |
| 2006 | | R | *Hillia maida* (Dyar, 1904)<br>L: Bowman (1951), Crumb (1956) C: CNC, UASM | L Aug – Sep | M | – | – |
| 2007 | | R H | *Hillia iris* (Zetterstedt, 1839)<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, UASM | L Aug – M Sep | M | B | g |
| 2008 | | R | *Brachylomia populi* (Strecker, 1898)<br>T: Troubridge and Lafontaine (2007) | E Aug – M Oct | – | B | g |

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| | | | L: Bowman (1951), Crumb (1956), Prentice (1962), Ives and Wong (1988), Troubridge and Lafontaine (2007) C: CNC, NFRC, PMAE, UASM | | | | | |
| 2009 | | R | *Brachylomia algens* (Grote, 1878)<br>T: Forbes (1954), Troubridge and Lafontaine (2007)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b), Troubridge and Lafontaine (2007) C: CNC, UASM | M Aug – M Sep | M | B | g |
| 2010 | | R | *Brachylomia discinigra* (Walker, 1856)<br>T: Forbes (1954), Troubridge and Lafontaine (2007)<br>L: Bowman (1951), Pohl et al. (2004b), Troubridge and Lafontaine (2007) C: CNC, UASM | M Aug – L Aug | M | B | g |
| 2011 | * | R | *Brachylomia cascadia* Troubridge and Lafontaine, 2007<br>T: Troubridge and Lafontaine (2007)<br>L: None C: CNC | M Aug – L Aug | M | – | – |
| 2012 | * | R H | *Parastichtis suspecta* (Hübner, 1856)<br>T: Forbes (1954)<br>L: [Bowman (1951)], Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jul – M Aug | M | B | g |
| 2013 | | R | *Aseptis binotata* (Walker, 1865)<br>L: Prentice (1962) C: UASM, NFRC | L Aug | M | – | – |
| 2014 | | R | *Aseptis characta* (Grote, 1880)<br>L: Bowman (1951), Crumb (1956) C: CNC, UASM | L Jun – M Jul | – | – | G |
| 2015 | * | R | *Epidemas obscurus* Smith, 1903<br>L: [Bowman (1951)] C: CNC, UASM | Sep | – | – | G |
| 2016 | | R | *Cosmia praeacuta* (Smith, 1894)<br>T: Lafontaine and Troubridge (2003)<br>L: Lafontaine and Troubridge (2003) C: CNC, NFRC, OLDS, UASM | M Aug | M | – | – |
| 2017 | | R | *Cosmia elisae* Lafontaine and Troubridge, 2003<br>T: Lafontaine and Troubridge (2003)<br>L: Lafontaine and Troubridge (2003) C: CNC, UASM | L Jul – E Sep | M | – | – |
| 2018 | * | U | *Zotheca tranquilla* Grote, 1874<br>L: Crumb (1956) C: Unknown | Jul – Aug | M | – | – |
| 2019 | | R | *Enargia decolor* (Walker, 1858)<br>Aspen Twoleaf Tier<br>T: Franclemont (1939)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Aug – L Sep | M | B | g |
| 2020 | * | R | *Enargia infumata* (Grote, 1874)<br>Lesser Aspen Twoleaf Tier | M Jul – L Aug | M | B | g |

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| | | | T: Franclemont (1939)<br>L: Franclemont (1939), Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | | | | |
| 2021 | * | R | *Ipimorpha pleonectusa* Grote, 1873<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jul – M Sep | m | B | g |
| 2022 | | R | *Andropolia contacta* (Walker, 1856)<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | E Aug – E Sep | M | B | g |
| 2023 | * | R | *Andropolia aedon* (Grote, 1880)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, UASM | L Aug | M | – | – |
| 2024 | * | R | *Andropolia theodori* (Grote, 1878)<br>L: None C: UASM | L Aug | M | – | – |
| 2025 | | R | *Rhizagrotis cloanthoides* (Grote, 1881)<br>L: None C: CNC, UASM | M Jul | – | – | G |
| 2026 | | R | *Rhizagrotis albalis* (Grote, 1878)<br>L: Hooper (1991b) C: CNC, OLDS, UASM | L Jun – L Jul | – | – | G |
| 2027 | * | R | *Cerapoda stylata* Smith, 1893<br>L: None C: CNC, UASM | M Jun – L Jun | – | – | G |
| 2028 | | R | *Fishia discors* (Grote, 1881)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | M Sep – L Sep | M | B | g |
| 2029 | * | R | *Fishia yosemitae* (Grote, 1873)<br>T: Holland (1903), Forbes (1954),<br>L: Bowman (1951) C: CNC, UASM, NFRC, OLDS | M Aug – L Sep | M | B | G |
| 2030 | | R | *Platypolia anceps* (Stephens, 1850)<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E – L Sep | – | B | g |
| 2031 | | R | *Platypolia contadina* (Smith, 1894)<br>L: Bowman (1951) C: CNC, OLDS, UASM | L Aug – E Sep | M | B | – |
| 2032 | | R | *Platypolia loda* Strecker, 1898<br>L: Bowman (1951) C: CNC | M Aug – E Sep | M | – | – |
| 2033 | * | R | *Xylotype arcadia* Barnes and Benjamin, 1922<br>T: Forbes (1954)<br>L: [Bowman (1951)], Prentice (1962), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Aug – M Sep | M | B | – |
| 2034 | * | U | *Dryotype opina* (Grote, 1878) | Sep? | M | – | – |

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| | | | L: Crumb (1956) C: Unknown | | | | |
| 2035 | * | R | *Mniotype ducta* (Grote, 1878)<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, OLDS, UASM | E Jun – E Jul | M | B | G |
| 2036 | * | R | *Mniotype tenera* (Smith, 1900)<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, OLDS, PMAE, UASM | L May – L Jun | M | b | G |
| 2037 | * | R | *Sutyna privata* (Walker, 1857)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M Aug – M Sep | – | b | g |
| 2038 | | R | *Ufeus satyricus* Grote, 1873<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962) C: CNC, NFRC, OLDS, PMAE, UASM | M Apr – L Apr; M Sep – M Oct (H) | – | B | g |
| 2039 | * | R | *Ufeus plicatus* Grote, 1873<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962) C: CNC, PMAE, UASM | E Apr; L Jul – E Aug; Oct (H) | m | b | g |
| 2040 | | R | *Chytonix palliatricula* (Guenée, 1852)<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L May – M Jul | m | B | g |
| 2040.1 | * | P | *Pseudobryomima muscosa* (Hampson, 1906) | ? | M | – | – |
| 2041 | * | R | *Pseudanarta crocea* (Edwards, 1875)<br>L: None C: CNC, UASM | M Aug – E Sep | – | – | G |
| 2041.1 | * | P | *Magusa divaricata* (Grote, 1874) | ? | – | b | g |
| **Orthosiini** | | | | | | | |
| 2041.2 | * | P | *Acerra normalis* Grote, 1874 | May? | M | – | – |
| 2042 | | R | *Stretchia plusiaeformis* Edwards, 1874<br>T: McDunnough (1949)<br>L: McDunnough (1949), Bowman (1951) C: CNC, NFRC, OLDS, UASM | M AprIL – M May | – | B | g |
| 2043 | | R | *Stretchia muricina* (Grote, 1876)<br>T: McDunnough (1949)<br>L: ?McDunnough (1949), Bowman (1951), Crumb (1956), Godfrey (1972), Hooper (1993) C: CNC, UASM | L May | m | – | G |
| 2043.1 | * | P | *Orthosia pulchella* (Harvey, 1876) | ? | M | – | – |
| 2044 | | R | *Orthosia revicta* (Morrison, 1876)<br>T: Forbes (1954) | M Apr – E Jun | m | B | G |

L: Bowman (1951), Crumb (1956), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

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| 2045 | * | R | *Orthosia segregata* (Smith, 1893)<br>T: Forbes (1954), McCabe (1980)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M AprIL – E Jun | m | B | G |
| 2046 | | R | *Orthosia hibisci* (Guenée, 1852)<br>Speckled Green Fruitworm<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E AprIL – M May | m | B | g |
| 2047 | | R | *Crocigrapha normani* (Grote, 1874)<br>T: Forbes (1954)<br>L: Bowman (1951), Godfrey (1972) C: CNC, OLDS, UASM | E May – E Jun | – | – | G |
| 2048 | * | R | *Egira variabilis* (Smith, 1891)<br>L: None C: UASM, NFRC | ? | M | – | – |
| 2048.1 | * | P | *Egira curialis* (Grote, 1973) | ? | – | – | G |
| 2049 | | R | *Egira dolosa* (Grote, 1880)<br>T: Forbes (1954)<br>L: Bowman (1951), Prentice (1962), Ives and Wong (1988), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L Apr – L May | – | B | g |
| 2050 | | R | *Egira rubrica* (Harvey, 1878)<br>L: Bowman (1951), Crumb (1956) C: CNC, OLDS, UASM | M May – E Jun | m | – | G |
| 2051 | * | R | *Morrisonia evicta* (Grote, 1873)<br>T: Forbes (1954)<br>L: None C: UASM | M May | – | – | G |

**Tholerini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2052 | | R | *Tholera americana* (Smith, 1894)<br>L: Bowman (1951) C: CNC, UASM | L Aug – E Sep | m | – | G |
| 2053 | | R | *Nephelodes minians* Guenée, 1852<br>T: Forbes (1954)<br>L: Bowman (1951), Crumb (1956) C: CNC, NFRC, OLDS, PMAE, UASM | E Aug – E Sep | m | b | G |

**Hadenini**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2054 | | R | *Escaria homogena* McDunnough, 1922<br>L: Bowman (1951) C: CNC, UASM | M May – M Aug | – | – | G |

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|---|---|---|---|---|---|---|---|
| 2055 | * | R | *Afotella cylindrica* (Grote, 1880)<br>L: None C: CNC, UASM | M May – E Sep (2Br?) | – | – | G |
| 2056 | * | R | *Hadenella pergentilis* Grote, 1883<br>L: Bowman (1951) C: CNC, UASM | M May – E Sep (2Br?) | – | – | G |
| 2057 | * | R | *Anarta nigrolunata* Packard, 1867<br>L: [Bowman (1951)] C: CNC, UASM | E Jun – M Jul | M | – | – |
| 2058 | | R H | *Anarta trifolii* (Hufnagel, 1766)<br>T: Mustelin (2006)<br>L: Dod (1916), Bowman (1951) C: CNC, NFRC, OLDS, UASM | M May – M Jun; L Jul – M Aug (2Br) | – | b | G |
| 2059 | | R | *Anarta mutata* (Dod, 1913)<br>T: Mustelin (2006)<br>L: Dod (1916), Bowman (1951) C: CNC, UASM | E – L Jun; M Aug – L Aug (2Br) | M | b | G |
| 2059.1 | * | P | *Anarta hamata* (McDunnough, 1930)<br>T: McDunnough (1930), Mustelin (2006) | ? | M | – | g |
| 2060 | * | R | *Anarta montanica* (McDunnough, 1930)<br>T: McDunnough (1930), Mustelin (2006)<br>L: None C: CNC, UASM | M May – E Jun | M | – | G |
| 2061 | * | R | *Anarta columbica* (McDunnough, 1930)<br>T: McDunnough (1930), Mustelin (2006)<br>L: None C: UASM | E Jul – M Jul | M | – | – |
| 2062 | | R | *Anarta alta* (Barnes and Benjamin, 1924)<br>T: Mustelin (2006)<br>L: Bowman (1951) C: CNC, UASM | E Jun – M Jul | M | – | – |
| 2063 | * | R | *Anarta obesula* (Smith, 1904)<br>T: Mustelin (2006)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M Jun – M Jul | m | b | G |
| 2064 | | R | *Anarta farnhami* (Grote, 1873)<br>T: Mustelin (2006)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | M May – L Jun | M | b | G |
| 2065 | * | R | *Anarta crotchii* (Grote, 1880)<br>T: Mustelin (2006)<br>L: Bowman (1951) C: CNC, OLDS, UASM | E May – E Jun | – | b | G |
| 2066 | | R | *Anarta antica* (Smith, 1891)<br>T: Mustelin (2006)<br>L: None C: CNC, UASM | M May – L Jun | – | – | G |
| 2067 | * | R | *Anarta decepta* (Grote, 1883)<br>T: Mustelin (2006)<br>L: None C: CNC, UASM | M May – E Sep (2Br?) | – | – | G |
| 2068 | | R | *Scotogramma submarina* (Grote, 1883)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M May – M Aug (2Br) | – | – | G |

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|---|---|---|---|---|---|---|---|
| 2069 | | R | *Scotogramma fervida* Barnes and McDunnough, 1912<br>T: McDunnough (1943a), Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | M May – L Jul | – | – | G |
| 2070 | * | R | *Coranarta luteola* (Grote and Robinson, 1865)<br>T: Lafontaine et al. (1987a)<br>L: [Bowman (1951)], ?Lafontaine et al. (1987a) C: CNC, NFRC, OLDS, PMAE, UASM | E May – L Jul | M | B | – |
| 2071 | * | R | *Coranarta macrostigma* (Lafontaine and Mikkola, 1987)<br>T: Lafontaine et al. (1987a)<br>L: Lafontaine et al. (1987a) C: CNC, UASM | M May – M Jul | M | B | g |
| 2072 | * | R | *Polia discalis* (Grote, 1877)<br>T: McCabe (1980)<br>L: Bowman (1951), McCabe (1980) C: CNC, OLDS, PMAE, UASM | E Jul – M Jul | m | B | g |
| 2073 | * | R | *Polia piniae* Buckett and Bauer, 1967<br>T: Buckett and Bauer (1966), McCabe (1980)<br>L: None C: CNC, UASM | E Jul – M Jul | M | – | – |
| 2074 | | R | *Polia nimbosa* (Guenée, 1852)<br>T: McCabe (1980)<br>L: Bowman (1951), Crumb (1956), McCabe (1980), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E Jun – M Jul | M | B | g |
| 2075 | | R | *Polia imbrifera* (Guenée, 1852)<br>T: McCabe (1980)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Jul | – | B | g |
| 2076 | * | R | *Polia rogenhoferi* (Möschler, 1870)<br>T: McCabe (1980)<br>L: Bowman (1951), McCabe (1980) C: CNC, NFRC, OLDS, UASM | L Jun – L Jul | M | B | – |
| 2077 | | R | *Polia propodea* McCabe, 1980<br>T: McCabe (1980)<br>L: McCabe (1980) C: CNC, OLDS, UASM | E Jul – M Aug | M | B | – |
| 2078 | * | R H | *Polia richardsoni* (Curtis, 1834)<br>T: McCabe (1980)<br>L: Bowman (1951) C: UASM | L Jul | M | – | – |
| 2079 | | R | *Polia purpurissata* (Grote, 1864)<br>T: McCabe (1980)<br>L: Bowman (1951), ?Crumb (1956), McCabe (1980) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – L Aug | M | b | G |
| 2080 | | R | *Polia nugatis* (Smith, 1898)<br>T: McCabe (1980)<br>L: None C: CNC, OLDS, UASM | E – L Aug | – | – | G |
| 2081 | | R | *Lacanobia nevadae* (Grote, 1876) | E Jun – E Jul | M | B | g |

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| | | T: McCabe (1980) L: Bowman (1951), Buckett (1968), McCabe (1980) C: CNC, OLDS, PMAE, UASM | | | | |
| 2082 | R | *Lacanobia atlantica* (Grote, 1874) T: McCabe (1980) L: Bowman (1951), Godfrey (1972), McCabe (1980) C: CNC, NFRC, OLDS, PMAE, UASM | L May – L Jul | – | b | G |
| 2083 | R | *Lacanobia radix* (Walker, [1857]) T: McCabe (1980) L: Bowman (1951), Prentice (1962), McCabe (1980), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M May – M Jul | M | B | G |
| 2084 | R | *Lacanobia subjuncta* (Grote and Robinson, 1868) T: McCabe (1980) L: Bowman (1951), Crumb (1956), McCabe (1980) C: CNC, OLDS, UASM | M Jun – L Jul | M | b | G |
| 2085 | R | *Melanchra adjuncta* (Guenée, 1852) T: McCabe (1980) L: Bowman (1951), Crumb (1956), McCabe (1980), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – L Jul | m | b | G |
| 2086 | R | *Melanchra picta* (Harris, 1841) T: McCabe (1980) L: Bowman (1951), Crumb (1956), Godfrey (1972), McCabe (1980) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – L Jul | m | b | G |
| 2087 | R | *Melanchra pulverulenta* (Smith, 1888) T: McCabe (1980) L: Bowman (1951), Crumb (1956) C: CNC, NFRC, OLDS, UASM | L May – M Jul | M | B | – |
| 2088 | R | *Melanchra assimilis* (Morrison, 1874) T: McCabe (1980) L: Bowman (1951), Crumb (1956), Prentice (1962), McCabe (1980) C: CNC, NFRC, OLDS, PMAE, UASM | L May – E Jul | m | b | g |
| 2089 | R | *Spiramater grandis* (Guenée, 1852) T: McCabe (1980) L: McCabe (1980) C: CNC, OLDS, UASM | E Jun – L Jun | – | – | G |
| 2090 | R | *Spiramater lutra* (Guenée, 1852) T: McCabe (1980) L: Bowman (1951), Prentice (1962) C: CNC, NFRC, OLDS, UASM | L May – E Jul | M | b | G |
| 2091 | * R | *Trichordestra rugosa* (Morrison, 1875) | L Jun | – | B | – |

T: McCabe (1980)
L: None C: CNC

2092 R *Trichordestra tacoma* (Strecker, 1900) L May – E Jul M B –
T: McCabe (1980)
L: Bowman (1951), McCabe (1980) C: CNC, NFRC, OLDS, PMAE, UASM

2093 * R *Trichordestra legitima* (Grote, 1864) M Jul – B –
T: McCabe (1980)
L: None C: UASM

2094 R *Trichordestra dodii* (Smith, 1904) L Jun – M Jul m b g
T: McCabe (1980)
L: Bowman (1951), McCabe (1980) C: CNC, NFRC, OLDS, UASM

2095 R *Trichordestra lilacina* (Harvey, 1874) L Jun – Aug M b G
T: McCabe (1980)
L: Bowman (1951), Crumb (1956), Buckett (1968), McCabe (1980) C: CNC, NFRC, OLDS, UASM

2096 R *Trichordestra liquida* (Grote, 1881) L May – E Jul M B G
T: McCabe (1980)
L: Bowman (1951), Crumb (1956), Buckett (1968), Godfrey (1972), McCabe (1980) C: CNC, OLDS, UASM

2097 * R *Papestra quadrata* (Smith, 1891) E May – M Jun M B g
T: McCabe (1980)
L: Bowman (1951), Prentice (1962), McCabe (1980) C: CNC, OLDS, PMAE, UASM

2098 * R *Papestra biren* (Goeze, 1781) E May – L Jul m B –
T: McCabe (1980)
L: McCabe (1980) C: CNC, NFRC, OLDS, UASM

2099 R *Papestra cristifera* (Walker, 1858) L May – M Jul M B g
T: McCabe (1980)
L: Bowman (1951), Crumb (1956), Prentice (1962), McCabe (1980), Ives and Wong (1988) C: CNC, NFRC, OLDS, UASM

2100 * R *Papestra brenda* (Barnes and McDunnough, 1916) M May – E Aug M B –
T: McCabe (1980)
L: McCabe (1980) C: CNC, OLDS, UASM

2101 R *Hada sutrina* (Grote, 1881) L May – E Jul M B g
T: Forbes (1954), Troubridge and Crabo (2002)
L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

2102 R *Mamestra configurata* Walker, 1856 E Jun – E Aug m b G
Bertha Armyworm

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|---|---|---|---|---|---|---|---|
| | | | L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | | | | |
| 2103 | | R | *Mamestra curialis* (Smith, 1888) T: Forbes (1954) L: Bowman (1951), Hooper (1993) C: CNC, UASM | L May – E Jul | M | b | G |
| 2104 | * | R | *Sideridis fuscolutea* (Smith, 1892) L: Bowman (1951) C: CNC, UASM | E Jun – M Jun | – | – | G |
| 2105 | * | R | *Sideridis uscripta* (Smith, 1891) L: None C: CNC, UASM | M May – M Jun | – | – | G |
| 2106 | * | R | *Sideridis artesta* (Smith, 1903) T: Forbes (1954) L: Bowman (1951) C: CNC, OLDS, UASM | E Jun – L Jun | – | – | G |
| 2107 | | R | *Sideridis rosea* (Harvey, 1874) T: Forbes (1954) L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | E May – E Jul | – | b | G |
| 2108 | | R | *Sideridis maryx* (Guenée, 1852) T: Forbes (1954) L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | L May – M Jun | M | B | – |
| 2108.1 | * | P | *Admetovis oxymorus* Grote, 1873 T: Miller and Hammond (2000) | ? | M | – | – |
| 2109 | | R | *Hadena variolata* (Smith, 1888) T: Troubridge and Crabo (2002) L: Troubridge and Crabo (2002) C: UASM | E Jul – E Aug | M | – | – |
| 2110 | | R | *Hadena circumvadis* (Smith, 1902) T: Troubridge and Crabo (2002) L: Bowman (1951), Troubridge and Crabo (2002) C: CNC, NFRC, UASM | L Jun – M Jul | M | b | G |
| 2111 | | R | *Hadena ectrapela* (Smith, 1898) T: Troubridge and Crabo (2002) L: Bowman (1951), Troubridge and Crabo (2002) C: CNC, UASM | E Jul – M Jul | M | – | – |
| 2112 | * | R | *Faronta diffusa* (Walker, 1856) Wheat Head Armyworm Moth T: Forbes (1954) L: Bowman (1951), Crumb (1956) C: CNC, NFRC, OLDS, PMAE, UASM | M May – E Jul | – | b | G |
| **Leucaniini** | | | | | | | |
| 2113 | | R | *Dargida procinctus* (Grote, 1873) L: Bowman (1951), Crumb (1956), Godfrey (1972) C: CNC, NFRC, OLDS, PMAE, UASM | L Aug – E Oct | M | b | G |
| 2114 | * | R | *Mythimna oxygala* (Grote, 1881) | M Jun – E Sep | M | B | G |

T: Forbes (1954), Hacker et al. (2002)
L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM

2115 * R *Mythimna unipuncta* (Haworth, 1809) M Jun – E Sep m b G
Armyworm Moth
T: Forbes (1954), Hacker et al. (2002)
L: Bowman (1951), Crumb (1956) C: CNC, OLDS, PMAE, UASM

2116 * R *Leucania farcta* (Grote, 1881) L Jun M – –
L: Crumb (1956), Godfrey (1972) C: UASM

2117 * R *Leucania anteroclara* Smith, 1902 E Jul – L Jul M b G
T: McDunnough (1943a)
L: Bowman (1951) C: CNC, OLDS, UASM

2118 R *Leucania multilinea* Walker, 1856 L Jun – E Aug m b G
T: Forbes (1954)
L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM

2119 R *Leucania commoides* Guenée, 1852 L Jun – L Aug m b G
T: Forbes (1954)
L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM

2120 * R *Leucania insueta* Guenée, 1852 L May – E Jul M B G
T: Forbes (1954)
L: Bowman (1951) C: CNC, NFRC, OLDS, UASM

2121 * R *Leucania dia* (Grote, 1879) M Jun – M Jul M B g
L: None C: CNC, NFRC, PMAE, UASM

**Eriopygini**

2122 R *Lasionycta taigata* Lafontaine, 1988 L Jun – M Jul m B –
T: Lafontaine and Kononenko (1988); Crabo and Lafontaine (2009)
L: Lafontaine and Kononenko (1988); Crabo and Lafontaine (2009) C: CNC, UASM

2123 R H *Lasionycta secedens* (Walker, [1858]) M Jun – M Jul M B –
T: McCabe (1980); Crabo and Lafontaine (2009)
L: Bowman (1951); Crabo and Lafontaine (2009) C: CNC, UASM

2124 * R *Lasionycta fergusoni* Crabo and Lafontaine, 2009 M Jul – L Jul M – –
T: Crabo and Lafontaine (2009)
L: [Bowman (1951)]; Crabo and Lafontaine (2009) C: CNC, UASM

2125 * R *Lasionycta mutilata* (Smith, 1898) L Jul M – –

T: Crabo and Lafontaine (2009)
L: Crabo and Lafontaine (2009) C: CNC, UASM

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| 2126 | | R | *Lasionycta luteola* (Smith, 1893) | E Jul – L Jul | M | – | – |
| | | | T: Lafontaine et al. (1986); Crabo and Lafontaine (2009)<br>L: Bowman (1951); Crabo and Lafontaine (2009) C: CNC, UASM | | | | |
| 2127 | * | R | *Lasionycta leucocycla* (Staudinger, 1857) | M Jul | M | – | – |
| | | | T: Lafontaine et al. (1986); Crabo and Lafontaine (2009)<br>L: Bowman (1951), Lafontaine et al. (1986); Crabo and Lafontaine (2009) C: CNC, UASM | | | | |
| 2128 | * | R | *Lasionycta anthracina* Crabo and Lafontaine, 2009 | L Jun | – | B | – |
| | | | T: Crabo and Lafontaine (2009)<br>L: Crabo and Lafontaine (2009) C: UASM | | | | |
| 2129 | * | R | *Lasionycta poca* (Barnes and Benjamin, 1923) | M Jun – M Jul | M | – | – |
| | | | T: Lafontaine et al. (1986); Crabo and Lafontaine (2009)<br>L: Bowman (1951), Lafontaine et al. (1986); Crabo and Lafontaine (2009) C: CNC, UASM | | | | |
| 2130 | | R | *Lasionycta frigida* Crabo and Lafontaine, 2009 | M Jul | M | – | – |
| | | | T: Lafontaine et al. (1986); Crabo and Lafontaine (2009)<br>L: Crabo and Lafontaine (2009) C: CNC, UASM | | | | |
| 2131 | * | R | *Lasionycta perplexa* (Smith, 1888) | L Jun – L Jul | M | b | – |
| | | | T: Crabo and Lafontaine (2009)<br>L: Bowman (1951), Crumb (1956), Godfrey (1972); Crabo and Lafontaine (2009) C: CNC, UASM | | | | |
| 2132 | | R | *Lasionycta perplexella* Crabo and Lafontaine, 2009 | M Jul | M | – | – |
| | | | T: Crabo and Lafontaine (2009)<br>L: Crabo and Lafontaine (2009) C: CNC, UASM | | | | |
| 2133 | * | R | *Lasionycta subfuscula* (Grote, 1874) | M Jun – L Jul | M | – | – |
| | | | T: Crabo and Lafontaine (2009)<br>L: Bowman (1951); Crabo and Lafontaine (2009) C: CNC, UASM | | | | |
| 2134 | | R | *Lasionycta quadrilunata* (Grote, 1874) | L Jul | M | – | – |
| | | | T: Lafontaine et al. (1986); Crabo and Lafontaine (2009)<br>L: Crabo and Lafontaine (2009) C: CNC, UASM | | | | |
| 2135 | * | R | *Lasionycta lagganata* (Barnes and Benjamin, 1923) | M Aug | M | – | – |
| | | | T: Lafontaine et al. (1986); Crabo and Lafontaine (2009)<br>L: Bowman (1951), Lafontaine et al. (1986); Crabo and Lafontaine (2009) C: CNC, UASM | | | | |

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| 2136 | * | R | *Lasionycta uniformis* (Smith, 1893<br>T: Lafontaine et al. (1986); Crabo and Lafontaine (2009)<br>L: Bowman (1951); Crabo and Lafontaine (2009) C: CNC, UASM | M Jul – E Aug | M | – | – |
| 2137 | | R | *Lasionycta brunnea* Crabo and Lafontaine, 2009<br>T: Crabo and Lafontaine (2009)<br>L: Crabo and Lafontaine (2009) C: CNC, UASM | L Jul – M Aug | M | – | – |
| 2138 | * | R | *Lasionycta promulsa* (Morrison, 1875)<br>T: Lafontaine et al. (1986); Crabo and Lafontaine (2009)<br>L: Bowman (1951); Crabo and Lafontaine (2009) C: CNC, UASM | L Jun – L Jul | M | – | – |
| 2139 | | R | *Lasionycta pulverea* Crabo and Lafontaine, 2009<br>T: Crabo and Lafontaine (2009)<br>L: Crabo and Lafontaine (2009) C: CNC, UASM | M Jul | M | – | – |
| 2140 | | R | *Lasionycta silacea* Crabo and Lafontaine, 2009<br>T: Crabo and Lafontaine (2009)<br>L: Crabo and Lafontaine (2009) C: CNC, UASM | M Jul – E Aug | M | – | – |
| 2141 | | R | *Lasionycta impingens* (Walker, 1857)<br>T: Lafontaine et al. (1986); Crabo and Lafontaine (2009)<br>L: Bowman (1951); Crabo and Lafontaine (2009) C: CNC, UASM | M Jul – L Jul | M | – | – |
| 2142 | | R | *Lacinipolia meditata* (Grote, 1873)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | M Jul – E Aug | M | b | G |
| 2143 | | R | *Lacinipolia lustralis* (Grote, 1875)<br>T: Forbes (1954)<br>L: Bowman (1951), Godfrey (1972) C: CNC, OLDS, UASM | M Jun – E Jul | M | b | G |
| 2144 | * | U | *Lacinipolia cuneata* (Grote, 1873)<br>T: Forbes (1954)<br>L: Crumb (1956), Godfrey (1972) C: Unknown | Jun? | M | – | – |
| 2145 | | R | *Lacinipolia anguina* (Grote, 1881)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M May – M Jul | M | B | G |
| 2146 | | R | *Lacinipolia longiclava* (Smith, 1891)<br>L: Bowman (1951) C: CNC, UASM | M May – M Jun | – | – | G |
| 2147 | * | R | *Lacinipolia naevia* (Smith, 1898)<br>T: McDunnough (1943a)<br>L: None C: BIRD, CNC, UASM | L May – M Jun | – | – | G |
| 2148 | * | R | *Lacinipolia vicina* (Grote, 1874)<br>T: Forbes (1954) | M Jun – E Aug | M | B | G |

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| | | | L: Bowman (1951) C: CNC, NFRC, OLDS, UASM | | | | |
| 2149 | | R | *Lacinipolia pensilis* (Grote, 1874)<br>T: McDunnough (1943a), Forbes (1954)<br>L: Bowman (1951) C: CNC, OLDS, UASM | M Aug – E Sep | M | – | G |
| 2150 | | R | *Lacinipolia renigera* (Stephens, 1829)<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – E Aug | M | b | G |
| 2151 | | R | *Lacinipolia stricta* (Walker, 1865)<br>L: Godfrey (1972) C: CNC, OLDS, UASM | L Aug – E Sep | – | – | G |
| 2152 | | R | *Lacinipolia lorea* (Guenée, 1852)<br>T: Forbes (1954)<br>L: Bowman (1951), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – M Jul | M | B | G |
| 2153 | | R | *Lacinipolia olivacea* (Morrison, 1874)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – L Aug | M | B | G |
| 2154 | * | R | *Lacinipolia comis* (Grote, 1876)<br>T: McDunnough (1943a)<br>L: None C: UASM | M Aug | M | – | – |
| 2155 | * | R | *Lacinipolia davena* (Smith, 1901)<br>T: McDunnough (1943a)<br>L: McDunnough (1943a), Bowman (1951) C: CNC, UASM | E Jul – M Jul | M | – | – |
| 2156 | * | R | *Lacinipolia strigicollis* (Wallengren, 1860)<br>L: None C: UASM | E Sep | – | – | G |
| 2157 | | R | *Anhimella contrahens* (Walker, 1860)<br>T: McDunnough (1943a), Forbes (1954)<br>L: McDunnough (1943a), Bowman (1951) C: CNC, OLDS, UASM | E Jul – E Aug | M | b | G |
| 2158 | * | R | *Homorthodes furfurata* (Grote, 1875)<br>T: McDunnough (1943a)<br>L: Bowman (1951) C: CNC, UASM | L Jun – M Jul | M | – | G |
| 2158.1 | * | P | *Homorthodes discreta* (Barnes and McDunnough, 1916) | ? | M | – | – |
| 2159 | * | R | *Protorthodes curtica* (Smith, 1890)<br>L: Hooper (1993) C: CNC | E Aug – L Aug | – | – | G |
| 2160 | * | R | *Protorthodes incincta* (Morrison, 1874)<br>T: Forbes (1954)<br>L: Bowman (1951) C: CNC, UASM | M Aug – L Aug | – | – | G |
| 2161 | * | R | *Protorthodes eureka* (Barnes and Benjamin, 1927)<br>L: [Hooper (1993)] C: CNC, UASM | M Aug – E Sep | – | – | G |
| 2162 | | R | *Protorthodes oviduca* (Guenée, 1852) | M May – L Jun | m | B | G |

T: Forbes (1954)
L: Bowman (1951), Crumb (1956), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM

2163 * R *Ulolonche disticha* (Morrison, 1875) L Jun – – G
L: None C: CNC, UASM

2164 R *Ulolonche orbiculata* (Smith, 1891) M May – E Jun – – G
L: None C: CNC, UASM

2165 * R *Orthodes goodelli* (Grote, 1875) E Jun – M Jul – b G
T: McCabe (1980)
L: Bowman (1951), McCabe (1980) C: CNC, UASM

2166 * R *Orthodes obscura* (Smith, 1888) E Jun – L Jun M B g
T: McCabe (1980)
L: Bowman (1951) C: CNC, PMAE, UASM

2167 * R *Orthodes majuscula* (Herrich-Schäffer, 1868) L Jun – – G
T: McDunnough (1943a), Forbes (1954)
L: None C: CNC, UASM

2167.1 * P *Orthodes cynica* Guenée, 1852 ? – b g
T: Forbes (1954)

2168 * R *"Polia" detracta* (Walker, 1857) E Jun – E Jul m B G
T: Forbes (1954), McCabe (1980)
L: Bowman (1951) C: CNC, UASM

2169 * R *Zosteropoda hirtipes* Grote, 1874 M Jul M – –
L: Godfrey (1972) C: UASM

2170 * R *Neleucania bicolorata* (Grote, 1881) L Jun – – G
L: None C: UASM

2171 * R *Hydroeciodes serrata* (Grote, 1880) M Aug – L Aug M – –
L: None C: CNC, UASM

**Noctuini – cutworm moths**

2172 * M *Peridroma saucia* (Hübner, [1808]) L May; L Aug – – – G
Variegated Cutworm M Oct (2Br)
T: Lafontaine (2004)
L: Bowman (1951), Lafontaine (2004) C: CNC, NFRC, OLDS, UASM

2173 * R *Anicla exuberans* (Smith, 1898) L Jun – E Aug – – G
T: Lafontaine (2004)
L: Bowman (1951), Hooper (1996a), Lafontaine (2004) C: CNC, UASM

2174 R *Anicla tepperi* (Smith, 1888) M Jun – M Jul m – G
T: Lafontaine (2004)
L: Bowman (1951), Lafontaine (2004) C: CNC, NFRC, OLDS, PMAE, UASM

2175 R H *Actebia fennica* (Tauscher, 1806) E Jul – M Sep m B g
Black Army Cutworm

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| | | | T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, NFRC, OLDS, UASM | | | | | |
| 2176 | | R H | *Actebia balanitis* (Grote, 1873)<br>T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, NFRC, OLDS, UASM | M Jun – L Sep | M | b | G |
| 2177 | * | R | *Dichagyris grotei* (Franclemont and Todd, 1983)<br>T: Lafontaine (2004)<br>L: None C: UASM | M Aug | M | – | – |
| 2178 | | R | *Dichagyris variabilis* (Grote, 1874)<br>T: Lafontaine (2004)<br>L: Bowman (1951), Crumb (1956), Lafontaine (2004) C: CNC, NFRC, UASM | M Aug – L Sep | M | – | g |
| 2179 | * | R | *Copablepharon longipenne* Grote, 1882<br>Dusky Dune Moth<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, UASM | E Jul – M Aug | – | – | G |
| 2180 | * | R | *Copablepharon grandis* (Strecker, 1878)<br>Pale Yellow Dune Moth<br>T: Lafontaine (2004)<br>L: Strickland (1920), Seamans (1925), Bowman (1951), Lafontaine (2004) C: CNC, UASM | L Jul – L Aug | – | b | G |
| 2181 | * | R | *Copablepharon viridisparsa* Dod, 1916<br>T: Lafontaine (2004)<br>L: Dod (1916), Bowman (1951), Crumb (1956), Lafontaine (2004) C: CNC, UASM | L Jun – L Jul | – | – | G |
| 2182 | | R | *Protogygia enalaga* McDunnough, 1932<br>T: Lafontaine (2004)<br>L: Lafontaine (2004) C: CNC, UASM | M May – E Jun | m | – | G |
| 2183 | | R | *Protogygia postera* Fauske and Lafontaine, 2004<br>T: Lafontaine (2004)<br>L: Lafontaine (2004) C: CNC, UASM | M Aug – L Aug | – | – | G |
| 2184 | * | R | *Protogygia querula* (Dod, 1915)<br>T: Lafontaine (2004)<br>L: Dod (1915b), Bowman (1951), Hooper (1996a) ,Lafontaine (2004) C: CNC, UASM | L Jun – L Jul | – | – | G |
| 2185 | * | R | *Protogygia alberta* Troubridge and Lafontaine, 2004<br>T: Lafontaine (2004)<br>L: Lafontaine (2004) C: CNC, UASM | L May – L Jun | – | – | G |
| 2186 | * | R | *Protogygia pallida* Fauske and Lafontaine, 2004<br>T: Lafontaine (2004)<br>L: [Seamans (1925)], [Bowman (1951)], Lafontaine (2004) C: CNC, UASM | L Jul – E Aug | – | – | G |

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| 2187 | | R | *Euxoa bochus* (Morrison, 1874)<br>T: Lafontaine (2004)<br>L: Lafontaine (2004) C: CNC | E Aug | M | – | G |
| 2188 | * | R H | *Euxoa adumbrata* (Eversmann, 1842)<br>T: Lafontaine (1987), Fibiger (1997)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, OLDS, UASM | E Jun – M Sep | M | B | G |
| 2189 | * | R | *Euxoa auxiliaris* (Grote, 1873)<br>Army Cutworm<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, NFRC, OLDS, PMAE, UASM | L May – E Sep | M | b | G |
| 2190 | * | R | *Euxoa shasta* Lafontaine, 1975<br>T: Lafontaine (1987)<br>L: None C: CNC, UASM | L Aug | M | – | – |
| 2191 | * | R | *Euxoa mimallonis* (Grote, 1873)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1975, 1987) C: CNC, OLDS, UASM | L Jul – M Sep | M | b | G |
| 2192 | * | R | *Euxoa septentrionalis* Walker, 1865<br>T: Lafontaine (1987)<br>L: Bowman (1951) C: UASM | E Sep | M | – | – |
| 2193 | | R | *Euxoa olivia* Morrison, 1876<br>T: Lafontaine (1987)<br>L: Bowman (1951) C: CNC | Aug | – | – | G |
| 2194 | * | R | *Euxoa messoria* (Harris, 1841)<br>Darksided Cutworm<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, OLDS, UASM | M Jul – L Sep | M | b | G |
| 2195 | | R | *Euxoa divergens* Walker, 1857<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – L Jul | M | B | G |
| 2196 | | R | *Euxoa sinelinea* Hardwick, 1965<br>T: Lafontaine (1987)<br>L: None C: CNC, UASM | L Jun – M Jul | – | B | – |
| 2197 | * | R | *Euxoa edictalis* (Smith, 1893)<br>T: Lafontaine (1987)<br>L: None C: UASM | M May | – | – | G |
| 2198 | | R | *Euxoa westermanni* (Staudinger, 1857)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | M Jul – E Aug | M | B | – |

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| 2199 | * | R | *Euxoa quebecensis* (Smith, 1900)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, OLDS, UASM | L Jun – L Jul | M | B | – |
| 2200 | * | R | *Euxoa scandens* (Riley, 1869)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, OLDS, PMAE, UASM | L Jun – L Jul | M | b | G |
| 2201 | | R | *Euxoa aurulenta* (Smith, 1888)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | L May – M Jul | – | – | G |
| 2202 | * | R | *Euxoa vallus* (Smith, 1900)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | E Jul – E Sep | M | – | – |
| 2203 | * | R | *Euxoa lewisi* (Grote, 1873)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | L Jul – L Aug | M | – | – |
| 2204 | * | R | *Euxoa tristicula* (Morrison, 1876)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, NFRC, OLDS, UASM | E Jun – E Aug | m | b | G |
| 2205 | * | R | *Euxoa atomaris* (Smith, 1890)<br>T: Lafontaine (1987)<br>L: Hardwick (1970a), Lafontaine (1987) C: ?CNC | L Jul | M | – | – |
| 2206 | | R | *Euxoa pleuritica* (Grote, 1876)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | L Jun – E Aug | – | b | G |
| 2207 | | R | *Euxoa pestula* Smith, 1904<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, OLDS, UASM | M Jun – L Jul | M | b | G |
| 2208 | | R | *Euxoa simona* McDunnough, 1932<br>T: Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | L Jun – L Jul | – | – | G |
| 2209 | | R | *Euxoa medialis* (Smith, 1888)<br>T: Lafontaine (1987)<br>L: Lafontaine (1987) C: CNC, UASM | E – L Sep | m | – | G |
| 2210 | * | R | *Euxoa perexcellens* (Grote, 1875) | L Aug | M | – | – |

T: Lafontaine (1987)
L: None C: UASM

2211 * R *Euxoa rufula* (Smith, 1888) L Jul – L Aug M – –
T: Lafontaine (1987)
L: Bowman (1951), Lafontaine (1987) C: CNC, UASM

2212 R *Euxoa intrita* (Morrison, 1874) E Aug – M Aug M b G
T: Lafontaine (1987)
L: Bowman (1951), Lafontaine (1987) C: CNC, NFRC, OLDS, UASM

2213 R *Euxoa terrenus* (Smith, 1900) E Jul – E Aug M – –
T: Lafontaine (1987)
L: Bowman (1951), Lafontaine (1987) C: CNC, UASM

2214 * R *Euxoa setonia* McDunnough, 1927 M Jun – E Aug M b G
T: Lafontaine (1987)
L: Lafontaine (1987) C: CNC, OLDS, UASM

2215 R *Euxoa declarata* (Walker, 1865) M Aug – M Sep M b G
T: Lafontaine (1987)
L: Bowman (1951), Lafontaine (1987) C: CNC, NFRC, OLDS, UASM

2216 R *Euxoa campestris* (Grote, 1875) M Jul – M Sep M B g
T: Lafontaine (1987)
L: Bowman (1951), Lafontaine (1987) C: CNC, OLDS, UASM

2217 * R *Euxoa silens* (Grote, 1875) M Jun – – G
T: Lafontaine (1987)
L: Lafontaine (1987) C: CNC

2218 R *Euxoa spumata* McDunnough, 1940 M Aug – E Sep – – G
T: Lafontaine (1987)
L: Lafontaine (1974, 1987) C: CNC, UASM

2219 R *Euxoa pallipennis* (Smith, 1888) M Aug – E Sep m – G
T: Lafontaine (1987)
L: Bowman (1951), Lafontaine (1987) C: CNC, NFRC, PMAE, UASM

2220 * R *Euxoa tessellata* (Harris, 1841) E Jul – M Aug M b G
Striped Cutworm
T: Lafontaine (1987)
L: Bowman (1951), Lafontaine (1987) C: CNC, NFRC, OLDS, UASM

2221 R *Euxoa plagigera* (Morrison, 1874) M Jul – L Aug m b G
T: Hinks and Byers (1976), Lafontaine (1987)
L: Bowman (1951), Lafontaine (1987) C: CNC, OLDS, UASM

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| 2222 | | R | *Euxoa albipennis* (Grote, 1876)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, OLDS, UASM | M Aug – E Sep | m | b | G |
| 2222.1 | * | P | *Euxoa hollemani* (Grote, 1879)<br>T: Lafontaine (1987) | ? | M | – | – |
| 2223 | | R | *Euxoa catenula* (Grote, 1879)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, UASM | L Aug – E Sep | – | – | G |
| 2224 | * | R | *Euxoa comosa* (Morrison, 1876)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, OLDS, UASM | E Aug – M Sep | M | b | G |
| 2225 | | R | *Euxoa infausta* (Walker, 1865)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, UASM | E Aug – E Sep | M | – | G |
| 2226 | | R | *Euxoa satis* (Harvey, 1876)<br>T: Lafontaine (1987)<br>L: Lafontaine (1987) C: CNC, UASM | ? | M | – | – |
| 2227 | * | R H | *Euxoa cursoria* (Hufnagel, 1766)<br>T: Lafontaine (1987)<br>L: None C: CNC, UASM | E Aug – L Aug | M | B | – |
| 2228 | * | R H | *Euxoa ochrogaster* (Guenée, 1851)<br>Red-backed Cutworm<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – L Sep | M | b | G |
| 2229 | | R | *Euxoa nostra* (Smith, 1890)<br>T: Lafontaine (1987)<br>L: Lafontaine (1987), Hooper (1994) C: CNC, UASM | L Jun | – | – | G |
| 2230 | | R | *Euxoa siccata* (Smith, 1893)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, UASM | E Sep – M Sep | – | – | G |
| 2231 | * | R | *Euxoa choris* (Harvey, 1876)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, OLDS, UASM | M Jul – M Aug | – | b | G |
| 2232 | | R | *Euxoa obeliscoides* (Guenée, 1852)<br>T: Lafontaine (1987) | M Aug – L Oct | – | b | G |

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| | | | L: Bowman (1951), Lafontaine (1987), Ives and Wong (1988) C: CNC, OLDS, PMAE, UASM | | | | |
| 2232.1 | * | P | *Euxoa oberfoelli* Hardwick, 1973<br>T: Lafontaine (1987) | ? | – | – | G |
| 2233 | | R | *Euxoa basalis* (Grote, 1879)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, NFRC, UASM | E Jul – E Sep | m | b | G |
| 2234 | | R | *Euxoa castanea* Lafontaine, 1981<br>T: Lafontaine (1987)<br>L: Lafontaine (1981,1987) C: CNC, OLDS, UASM | E Jul – E Aug | m | b | G |
| 2235 | * | R | *Euxoa idahoensis* (Grote, 1978)<br>T: Lafontaine (1981, 1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, UASM | ? | M | b | – |
| 2236 | * | R | *Euxoa furtivus* (Smith, 1890)<br>T: Lafontaine (1987)<br>L: None C: CNC, UASM | L Jun – L Jul | M | – | G |
| 2237 | * | R | *Euxoa clausa* McDunnough, 1923<br>T: Lafontaine (1981, 1987)<br>L: McDunnough (1923b), Bowman (1951), Lafontaine (1981, 1987) C: CNC, UASM | L Jul – E Aug | – | – | G |
| 2238 | | R | *Euxoa brevipennis* (Smith, 1888)<br>T: Lafontaine (1981, 1987)<br>L: Bowman (1951), Lafontaine (1981, 1987) C: CNC, UASM | E Sep – M Sep | – | – | G |
| 2239 | * | R | *Euxoa servitus* (Smith, 1895)<br>T: Lafontaine (1974, 1981, 1987)<br>L: Bowman (1951), Lafontaine (1974, 1981, ?1987) C: CNC, NFRC, UASM | E Jul – L Aug | M | b | G |
| 2240 | * | R | *Euxoa auripennis* Lafontaine, 1974<br>T: Lafontaine (1974, 1981, 1987)<br>L: [Bowman (1951)], Lafontaine (1974, 1981, 1987) C: CNC, UASM | E Aug – E Sep | M | – | G |
| 2241 | | R | *Euxoa olivalis* (Grote, 1979)<br>T: Lafontaine (1981, 1987)<br>L: Bowman (1951), Lafontaine (1981, 1987) C: CNC, NFRC, UASM | L Jun – M Aug | M | b | G |
| 2242 | | R | *Euxoa oblongistigma* (Smith, 1888)<br>T: Lafontaine (1981, 1987)<br>L: Bowman (1951), Lafontaine (1981, 1987) C: CNC, UASM | L Jul – E Sep | – | – | G |
| 2243 | | R | *Euxoa citricolor* (Grote, 1880) | M Aug – E Sep | – | – | G |

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| | | | T: Lafontaine (1981, 1987) L: Hooper (1994), Lafontaine (1981, 1987) C: CNC, UASM | | | | |
| 2244 | | R | *Euxoa tronellus* (Smith, 1903) T: Lafontaine (1981, 1987) L: Lafontaine (1981, 1987) C: CNC, OLDS, UASM | L Aug – E Sep | – | – | G |
| 2245 | | R | *Euxoa teleboa* (Smith, 1890) T: Lafontaine (1981, 1987) L: Bowman (1951), Lafontaine (1987) C: CNC, UASM | L Aug – E Sep | – | – | G |
| 2246 | | R | *Euxoa difformis* (Smith, 1900) T: Lafontaine (1987) L: Bowman (1951), ?Lafontaine (1987) C: CNC, UASM | L Aug – E Sep | – | b | G |
| 2247 | | R | *Euxoa moerens* (Grote, 1883) T: Lafontaine (1981, 1987) L: Lafontaine (1981, 1987) C: CNC | M Aug – L Aug | – | – | G |
| 2248 | * | R | *Euxoa murdocki* (Smith, 1890) T: Lafontaine (1981, 1987) L: Bowman (1951), Lafontaine (1981, 1987) C: UASM | L Aug | M | – | – |
| 2249 | * | R | *Euxoa dodi* McDunnough, 1923 T: Lafontaine (1981, 1987) L: Bowman (1951), Lafontaine (1981, 1987) C: CNC, UASM | M Aug – E Sep | m | – | G |
| 2250 | | R | *Euxoa infracta* (Morrison, 1875) T: Lafontaine (1981, 1987) L: Bowman (1951), Lafontaine (1981) C: CNC, UASM | E Aug – L Aug | M | – | g |
| 2251 | | R | *Euxoa laetificans* (Smith, 1894) T: Lafontaine (1981, 1987) L: Bowman (1951), Lafontaine (1981, 1987) C: CNC, OLDS, UASM | M Aug – E Sep | – | – | G |
| 2252 | * | R | *Euxoa quadridentata* (Grote and Robinson, 1865) T: Lafontaine (1981, 1987) L: Bowman (1951), Lafontaine (1981, 1987) C: CNC, OLDS, UASM | E Aug – M Sep | m | b | G |
| 2252.1 | * | P | *Euxoa unica* McDunnough, 1940 T: Lafontaine (1987) | ? | – | – | G |
| 2253 | | R | *Euxoa niveilinea* (Grote, 1882) T: Lafontaine (1981, 1987) L: Lafontaine (1981, 1987) C: CNC | ? | – | – | G |
| 2254 | | R | *Euxoa dargo* (Strecker, 1898) T: Lafontaine (1981, 1987) | L Aug – E Sep | – | – | G |

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| | | | L: Bowman (1951), Lafontaine (1987) C: CNC, UASM | | | | | |
| 2255 | * | R | *Euxoa detersa* (Walker, 1856) Sand Cutworm<br>T: Lafontaine (1981, 1987)<br>L: Bowman (1951), Lafontaine (1981, 1987) C: CNC, UASM | L Jul – M Sep | – | B | G |
| 2256 | | R | *Euxoa cicatricosa* (Grote and Robinson, 1865)<br>T: Lafontaine (1981, 1987)<br>L: Bowman (1951), Lafontaine (1981, 1987) C: CNC, UASM | L Aug – E Sep | – | – | G |
| 2257 | * | R | *Euxoa aequalis* (Harvey, 1876)<br>T: Lafontaine (1976, 1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, PMAE, UASM | E Aug – M Sep | M | b | G |
| 2257.1 | * | P | *Euxoa cona* (Strecker, 1898)<br>T: Lafontaine (1987) | Sep | – | – | G |
| 2258 | | R | *Euxoa munis* (Grote, 1879)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, NFRC, UASM | E Aug – E Sep | M | b | G |
| 2259 | | R | *Euxoa misturata* (Smith, 1890)<br>T: Lafontaine (1987)<br>L: None C: CNC, UASM | L Aug | – | – | G |
| 2260 | | R | *Euxoa nevada* (Smith, 1900)<br>T: Lafontaine (1987)<br>L: Lafontaine (1987) C: CNC, OLDS, UASM | M Aug – E Sep | – | – | G |
| 2261 | | R | *Euxoa cinereopallidus* (Smith, 1903)<br>T: Lafontaine (1987)<br>L: Lafontaine (1987) C: CNC, UASM | E Sep – L Sep | – | – | G |
| 2262 | * | R | *Euxoa mitis* (Smith, 1894)<br>T: Lafontaine (1987)<br>L: Bowman (1951), Lafontaine (1987) C: CNC, UASM | E Sep | – | – | G |
| 2263 | * | R H | *Euxoa nomas* (Ershov, 1874)<br>T: Hardwick (1970a), Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | E Jul – E Aug | M | – | – |
| 2264 | | R | *Euxoa aberrans* McDunnough, 1932<br>T: Hardwick (1970a), Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Hooper (1994), Lafontaine (1987) C: CNC, UASM | M Jul – L Jul | – | – | G |

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| 2265 | | R | *Euxoa manitobana* McDunnough, 1925<br>T: Hardwick (1970a), Lafontaine (1987)<br>L: Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | M Jul – L Jul | – | B | G |
| 2266 | | R | *Euxoa perolivalis* (Smith, 1905)<br>T: Hardwick (1970a), Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, NFRC, UASM | M Jul – L Aug | M | b | G |
| 2267 | * | R | *Euxoa perpolita* (Morrison, 1876)<br>T: Hardwick (1970a), Lafontaine (1987)<br>L: Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | E Aug – M Sep | m | B | G |
| 2268 | * | R | *Euxoa taura* Smith, 1905<br>T: Hardwick (1970a), Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, UASM | Aug | – | – | G |
| 2269 | | R | *Euxoa flavicollis* (Smith, 1888)<br>T: Hardwick (1970a), Lafontaine (1987)<br>L: Bowman (1951), Hardwick (1970a), Lafontaine (1987) C: CNC, NFRC, OLDS, UASM | M Jul – M Aug | – | B | G |
| 2270 | * | R | *Euxoa maimes* (Smith, 1903)<br>T: Byers et al. (1975), Lafontaine (1987)<br>L: Lafontaine (1987) C: CNC, UASM | E Aug – L Aug | – | b | G |
| 2271 | * | R | *Euxoa ridingsiana* (Grote, 1875)<br>T: Byers et al (1985), Lafontaine (1987)<br>L: Lafontaine (1987) C: CNC, NFRC, OLDS, PMAE, UASM | L Jul – L Aug | M | b | G |
| 2272 | | R | *Feltia mollis* (Walker, [1857])<br>T: Lafontaine and Kononenko (1986), Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, OLDS, UASM | E Jun – E Jul | M | B | g |
| 2273 | * | R H | *Feltia nigrita* (Graeser, 1892)<br>T: Lafontaine and Kononenko (1986), Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, UASM | L Jun – L Jul | M | B | – |
| 2274 | * | R | *Feltia jaculifera* (Guenée, 1852)<br>Dingy Cutworm<br>T: Lafontaine (2004) | M Jul – L Sep | – | b | G |

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| | | | L: Bowman (1951), Crumb (1956), Sperling et al. (1996), Lafontaine (2004) C: CNC, OLDS, PMAE, UASM | | | | |
| 2274.1 | * | P | *Feltia subgothica* (Haworth, 1809)<br>T: Lafontaine (2004) | ? | – | – | G |
| 2274.2 | * | P | *Feltia tricosa* (Lintner, 1874)<br>T: Lafontaine (2004) | ? | – | – | G |
| 2275 | | R | *Feltia herilis* (Grote, 1873)<br>T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, OLDS, PMAE, UASM | E Jul – M Sep | m | B | G |
| 2276 | | R | *Agrotis vetusta* Walker, 1856<br>T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, OLDS, UASM | L Jul – M Sep | m | b | G |
| 2277 | | R | *Agrotis daedalus* (Smith, 1890)<br>T: Lafontaine (2004)<br>L: Lafontaine (2004) C: CNC, UASM | M May – E Jun | – | – | G |
| 2278 | | R | *Agrotis rileyana* (Morrison, 1874)<br>T: Lafontaine (2004)<br>L: Lafontaine (2004) C: CNC | L Aug – E Sep | – | – | g |
| 2279 | * | R H | *Agrotis ruta* Eversmann, 1851<br>T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, OLDS, UASM | M Jul – L Jul | M | – | – |
| 2280 | * | R | *Agrotis orthogonia* Morrison, 1876<br>Pale Western Cutworm<br>T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, OLDS, UASM | M Aug – M Sep | m | – | G |
| 2280.1 | * | P | *Agrotis kingi* McDunnough, 1932<br>T: Lafontaine (2004) | ? | – | – | G |
| 2281 | | R | *Agrotis robustior* (Smith, 1899)<br>T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, OLDS, UASM | M Aug – L Aug | – | – | G |
| 2282 | | R | *Agrotis venerabilis* Walker, [1857]<br>T: Lafontaine (2004)<br>L: Bowman (1951), Crumb (1956), Lafontaine (2004) C: CNC, OLDS, UASM | E Aug – L Sep | m | b | G |
| 2283 | | R | *Agrotis vancouverensis* Grote, 1873<br>T: Lafontaine (2004) | E Jun – M Jul | M | – | g |

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| | | | L: Bowman (1951), Crumb (1956), Lafontaine (2004) C: CNC, OLDS, UASM | | | | |
| 2284 | * | R | *Agrotis stigmosa* Morrison, 1874<br>T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, UASM | M May – M Jun | – | – | G |
| 2285 | * | R | *Agrotis volubilis* Harvey, 1874<br>T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, OLDS, UASM | L May – L Jun | – | b | g |
| 2286 | * | R | *Agrotis obliqua* (Smith, 1903)<br>T: Lafontaine (2004)<br>L: Bowman (1951), Lafontaine (2004) C: CNC, OLDS, PMAE, UASM | M May – M Jul | m | b | G |
| 2287 | * | R | *Agrotis antica* Crabo and Lafontaine, 2004<br>T: Lafontaine (2004)<br>L: None C: CNC | L May | M | – | – |
| 2288 | * | M | *Agrotis ipsilon* (Hufnagel, 1766)<br>Black Cutworm<br>T: Lafontaine (2004)<br>L: Bowman (1951), Crumb (1956), Lafontaine (2004) C: CNC, OLDS, PMAE, UASM | L Aug – L Sep | – | – | G |
| 2289 | * | R | *Ochropleura implecta* Lafontaine, 1998<br>T: Lafontaine (1998)<br>L: [Bowman (1951)], [Crumb (1956)], [Ives and Wong (1988)], Lafontaine (1998) C: CNC, OLDS, UASM | L May – L Jul | M | B | g |
| 2290 | * | R | *Diarsia calgary* (Smith, 1898)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – L Jul | M | B | – |
| 2291 | | R | *Diarsia dislocata* (Smith, 1904)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | Jul – M Aug | M | B | – |
| 2292 | | R | *Diarsia rubifera* (Grote, 1875)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jul – M Aug | M | B | g |
| 2293 | * | R | *Diarsia rosaria* (Grote, 1878)<br>T: Hardwick (1950), Lafontaine (1998) | L Jun – L Aug | M | B | g |

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| | | | L: Hardwick (1950), Bowman (1951), Crumb (1956), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | | | | |
| 2294 | | R | *Cerastis salicarum* (Walker, 1857)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Apr – L Jun | m | B | g |
| 2295 | | R | *Paradiarsia littoralis* (Packard, 1867)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, NFRC, OLDS, PMAE, UASM | E Jun – M Jul | M | B | G |
| 2296 | * | R | *Hemipachnobia monochromatea* (Morrison, 1874)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, OLDS, UASM | L May – E Jul | – | B | – |
| 2297 | | R | *Lycophotia phyllophora* (Grote, 1874)<br>T: Lafontaine (1998)<br>L: None C: CNC, NFRC, UASM | M Jun – M Jul | – | B | – |
| 2298 | * | R | *Rhyacia clemens* (Smith, 1890)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, OLDS, UASM | L May – L Jun; L Aug – E Sep (2Br) | M | b | G |
| 2299 | | R H | *Chersotis juncta* (Grote, 1878)<br>T: Mikkola et al. (1987), Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, OLDS, UASM | E Jul – M Aug | M | B | G |
| 2300 | * | R I | *Noctua pronuba* (Linnaeus, 1758)<br>Large Yellow Underwing<br>T: Lafontaine (1998)<br>L: None C: CNC, UASM | L May – E Sep | – | b | G |
| 2301 | | R | *Cryptocala acadiensis* (Bethune, 1870)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – E Aug | – | B | G |
| 2302 | | R | *Spaelotis clandestina* (Harris, 1841)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, OLDS, PMAE, UASM | E Jun – L Jul; E Aug – L Sep (2Br) | M | B | G |
| 2303 | * | R | *Spaelotis bicava* Lafontaine, 1998<br>T: Lafontaine (1998)<br>L: [Bowman (1951)], Lafontaine (1998) C: CNC, NFRC, OLDS, UASM | E Jun – E Aug | m | – | G |

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| 2304 | * | R | H | *Eurois occulta* (Linnaeus, 1758)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Prentice (1962), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | M Jun – L Sep (2Br?) | M | B | g |
| 2305 | | R | | *Eurois astricta* (Morrison, 1874)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Crumb (1956), Prentice (1962), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – M Aug | M | B | G |
| 2306 | | R | | *Eurois nigra* (Smith, 1892)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Hooper (1996a), Lafontaine (1998) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – L Aug | M | b | – |
| 2307 | * | R | H | *Graphiphora augur* (Fabricius, 1775)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Prentice (1962), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | L Jun – M Sep | M | B | g |
| 2308 | | R | H | *Anaplectoides prasina* ([Denis and Schiffermüller], 1775)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Crumb (1956), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – M Aug | M | B | g |
| 2309 | | R | | *Anaplectoides pressus* (Grote, 1874)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Crumb (1956), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | E Jun – E Aug | M | B | g |
| 2310 | | R | | *Aplectoides condita* (Guenée, 1852)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | L May – L Jul | – | B | g |
| 2311 | * | U | | *Eueretagrotis sigmoides* (Guenée, 1852)<br>T: Lafontaine (1998)<br>L: ?Lafontaine (1998) C: Unknown | ? | – | – | G |
| 2312 | | R | | *Eueretagrotis perattentus* (Grote, 1874)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, NFRC, OLDS, UASM | L Jun – E Aug | M | B | g |
| 2313 | | R | | *Xestia smithii* (Snellen, 1896)<br>T: Lafontaine (1998) | M Jul – L Aug | M | B | G |

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| | | | L: Bowman (1951), Crumb (1956), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, PMAE, UASM | | | | |
| 2314 | | R | *Xestia normanianus* (Grote, 1874)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Crumb (1956), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jul – E Aug | M | B | g |
| 2315 | | R | *Xestia oblata* (Morrison, 1875)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, NFRC, OLDS, PMAE, UASM | E Jul – L Jul | M | B | – |
| 2316 | * | R | *Xestia plebeia* (Smith, 1898)<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC | ? | m | – | – |
| 2316.1 | * | P | *Xestia mustelina* (Smith, 1900)<br>T: Lafontaine (1998) | ? | M | – | – |
| 2317 | | R | *Xestia vernilis* (Grote, 1879)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, UASM | E Jul – L Aug | M | – | g |
| 2318 | * | R | *Xestia infimatis* (Grote, 1880)<br>T: Lafontaine (1998)<br>L: None C: UASM | E Sep | M | – | – |
| 2319 | * | R | *Xestia finatimis* Lafontaine, 1998<br>T: Lafontaine (1998)<br>L: None C: CNC, UASM | ? | M | – | – |
| 2320 | * | R | *Xestia praevia* Lafontaine, 1998<br>T: Lafontaine (1998)<br>L: [Bowman (1951)], [Prentice (1962)], Lafontaine (1998) C: CNC, NFRC, OLDS, UASM | L Jul – L Aug | M | B | – |
| 2321 | * | R | *Xestia dilucida* (Morrison, 1875)<br>T: Lafontaine (1998)<br>L: None C: UASM | M Aug | – | B | – |
| 2322 | * | R H | *Xestia c-nigrum* (Linnaeus, 1758)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Crumb (1956), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | M Jun – E Sep | M | B | G |
| 2323 | * | R | *Xestia maculata* (Smith, 1893)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, UASM | L Jul | M | – | – |
| 2324 | * | R H | *Xestia speciosa* (Hübner, [1813]) | L Jul – M Aug | M | – | – |

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| | | | T: Lafontaine (1998) L: Bowman (1951), Lafontaine (1998) C: CNC, OLDS, UASM | | | | |
| 2325 | * | R | *Xestia mixta* (Walker, 1856) T: Lafontaine (1998) L: Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, UASM | M Jul – M Aug | M | B | – |
| 2326 | | R | *Xestia imperita* (Hübner, [1831]) T: Lafontaine (1998) L: Bowman (1951), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jul – M Aug | M | B | – |
| 2327 | * | R H | *Xestia atrata* (Morrison, 1874) T: Lafontaine et al. (1987b), Lafontaine (1998) L: Lafontaine (1998) C: CNC, OLDS, UASM | L Jun – L Jul | M | B | – |
| 2328 | * | R H | *Xestia okakensis* (Packard, 1867) T: Lafontaine et al. (1987b), Lafontaine (1998) L: None C: CNC, UASM | L Jul | M | – | – |
| 2329 | * | R | *Xestia perquiritata* (Morrison, 1874) T: Lafontaine (1998) L: Bowman (1951), Crumb (1956), Prentice (1962), Lafontaine (1998) C: CNC, NFRC, PMAE, UASM | M Jul – M Aug | M | B | – |
| 2330 | * | R | *Xestia fabulosa* Ferguson, 1965 T: Lafontaine (1998) L: [Bowman (1951)], Lafontaine (1998) C: CNC, OLDS, UASM | L Jun – M Jul | M | B | – |
| 2331 | * | R | *Xestia homogena* McDunnough, 1921 T: Lafontaine (1998) L: Bowman (1951), Lafontaine (1998) C: CNC, UASM | M Jul – M Aug | M | B | – |
| 2331.1 | * | P | *Xestia bryanti* (Benjamin, 1933) T: Lafontaine (1998) | ? | M | – | – |
| 2332 | * | R | *Xestia lupa* Lafontaine and Mikkola, 1998 T: Lafontaine (1998) L: [Bowman (1951)], Lafontaine (1998) C: CNC, OLDS, UASM | E Jul – L Aug | M | – | – |
| 2333 | * | R | *Coenophila opacifrons* (Grote, 1878) T: Lafontaine (1998) L: Bowman (1951), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, OLDS, UASM | M Jul – E Aug | M | B | – |
| 2334 | | R | *Prognorisma substrigata* (Smith, 1895) T: Lafontaine (1998) L: Bowman (1951), Lafontaine (1998) C: CNC, NFRC, PMAE, UASM | M Jun – E Aug | M | b | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2335 | * | R | *Agnorisma bugrai* (Kocak, 1983)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, NFRC, UASM | E Aug – M Sep | M | b | G |
| 2336 | * | R | *Pseudohermonassa bicarnea* (Guenée, 1852)<br>T: Lafontaine (1998)<br>L: None C: CNC, UASM | E Aug | – | b | G |
| 2337 | | R | *Pseudohermonassa tenuicula* (Morrison, 1874)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998), Pohl et al. (2004b) C: CNC, NFRC, PMAE, UASM | M Jul – E Aug | m | B | G |
| 2338 | * | R | *Setagrotis pallidicollis* (Grote, 1890)<br>T: Lafontaine (1998)<br>L: [Bowman (1951)], Lafontaine (1998) C: CNC, OLDS, UASM | M Jul – E Aug | M | – | – |
| 2339 | * | R | *Setagrotis vocalis* (Grote, 1879)<br>T: Lafontaine (1998)<br>L: None C: UASM | M Aug | M | – | – |
| 2340 | * | R | *Setagrotis radiola* (Hampson, 1903)<br>T: Lafontaine (1998)<br>L: None C: CNC, UASM | M Aug – E Sep | – | – | G |
| 2341 | * | R | *Tesagrotis atrifrons* (Grote, 1873)<br>T: Lafontaine (1998)<br>L: None C: UASM | E Aug – L Aug | M | b | – |
| 2341.1 | * | P | *Tesagrotis piscipellis* (Grote, 1878)<br>T: Lafontaine (1998) | ? | M | – | – |
| 2341.2 | * | P | *Adelphagrotis indeterminata* (Walker, 1865)<br>T: Lafontaine (1998) | ? | M | – | – |
| 2342 | | R | *Parabagrotis exsertistigma* (Morrison, 1874)<br>T: Lafontaine (1998)<br>L: None C: CNC, NFRC, UASM | M Jun – E Oct (2Br) | M | – | G |
| 2343 | * | R | *Parabagrotis sulinaris* Lafontaine, 1998<br>T: Lafontaine (1998)<br>L: None C: UASM | L Aug | M | – | – |
| 2344 | | R | *Protolampra rufipectus* (Morrison, 1874)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Prentice (1962), Lafontaine (1998), Pohl et al. (2004b) C: CNC, UASM | M Jul – L Aug | M | B | G |
| 2345 | | R | *Protolampra brunneicollis* (Grote, 1864)<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, UASM | L Jun – M Jul | M | – | G |
| 2346 | * | R | *Abagrotis erratica* (Smith, 1890)<br>T: Lafontaine (1998) | M Aug | – | – | G |

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|---|---|---|---|---|---|---|---|
| | | | L: None C: CNC, UASM | | | | |
| 2347 | | R | *Abagrotis trigona* (Smith, 1893)<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, UASM | E Aug – E Sep | – | – | G |
| 2347.1 | * | P | *Abagrotis apposita* (Grote, 1878)<br>T: Lafontaine (1998) | ? | M | – | – |
| 2348 | | R | *Abagrotis vittifrons* (Grote, 1864)<br>T: Lafontaine (1998)<br>L: None C: CNC, UASM | M Aug | – | – | G |
| 2349 | * | R | *Abagrotis mirabilis* (Grote, 1879)<br>T: Lafontaine (1998)<br>L: None C: UASM | L Aug | M | – | – |
| 2350 | * | R | *Abagrotis nefascia* (Smith, 1908)<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, NFRC | ? | – | – | G |
| 2351 | | R | *Abagrotis reedi* Buckett, 1969<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, UASM | L Jun – E Sep | – | b | G |
| 2352 | * | R | *Abagrotis duanca* (Smith, 1908)<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, UASM | L Jun | – | – | G |
| 2353 | | R | *Abagrotis nanalis* (Grote, 1881)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, UASM | E Aug – M Sep | – | – | G |
| 2354 | * | R | *Abagrotis discoidalis* (Grote, 1876)<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, UASM | L Jun – M Aug | – | – | G |
| 2355 | * | R | *Abagrotis hermina* Lafontaine, 1998<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, UASM | L Jul – L Sep | M | b | G |
| 2356 | * | R | *Abagrotis dodi* McDunnough, 1927<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC | L Jul | M | b | – |
| 2357 | * | R | *Abagrotis placida* (Grote, 1876)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, NFRC, OLDS, PMAE, UASM | M Jul – E Sep | M | B | G |
| 2358 | * | R | *Abagrotis orbis* (Grote, 1876)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Lafontaine (1998) C: CNC, UASM | M Aug – E Sep | M | b | G |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2359 | | R | *Abagrotis variata* (Grote, 1876)<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, OLDS, UASM | L Jun – M Aug | M | b | G |
| 2360 | * | R | *Abagrotis scopeops* (Dyar, 1904)<br>T: Lafontaine (1998)<br>L: None C: UASM | E Sep | – | – | G |
| 2361 | * | R | *Abagrotis alternata* (Grote, 1864)<br>T: Lafontaine (1998)<br>L: Bowman (1951), Crumb (1956), Lafontaine (1998) C: CNC, UASM | L Jul – L Aug | – | – | G |
| 2362 | * | R | *Abagrotis forbesi* (Benjamin, 1921)<br>T: Lafontaine (1998)<br>L: None C: UASM | E Sep | M | – | – |
| 2363 | * | R | *Abagrotis brunneipennis* (Grote, 1875)<br>T: Lafontaine (1998)<br>L: None C: CNC, UASM | L Jul – L Aug | – | B | – |
| 2364 | * | R | *Abagrotis cupida* (Grote, 1864)<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, UASM | M Aug – E Sep | M | – | G |
| 2365 | * | R | *Pronoctua typica* Smith, 1894<br>T: Lafontaine (1998)<br>L: None C: UASM | L Aug | M | – | – |
| 2366 | * | R | *Pronoctua peabodyae* (Dyar, 1903)<br>T: Lafontaine (1998)<br>L: Lafontaine (1998) C: CNC, UASM | L Jul – M Aug | – | – | G |
| 2367 | * | R | *Pronoctua craboi* Lafontaine, 1998<br>T: Lafontaine (1998)<br>L: None C: CNC, UASM | L Jul – M Aug | M | – | – |

# Notes

1 ***Eriocrania semipurpurella*** – The nominate subspecies is known from ON, and subspecies *pacifica* Davis is known from Vancouver Island, BC; it is not known which of these subspecies, if either, applies to AB populations.

1.1 ***Acanthopteroctetes tripunctata*** – Known globally only from Glacier National Park, MT. It likely occurs in adjacent Waterton Lakes National Park in AB.

2 ***Acanthopteroctetes bimaculata*** – Known in AB only from near Lac La Biche and from Winfield. This species does not come to light; it is rarely collected but is probably more widely distributed in the boreal forest.

3 ***Gazoryctra hyperboreus*** – Reported only in July by Bowman (1951), but all known AB records are from considerably later, from mid-August to mid-September.

5 ***Gazoryctra novigannus*** – AB specimens are referable to subspecies *mackiei* (Barnes and Benjamin).

6 ***Korscheltellus gracilis*** – Two-year life cycle, with higher adult flight in alternate years.

7 ***Sthenopis argenteomaculatus*** – This species was reported from AB by Bowman (1951), but Schmidt and Lawrie (1999) determined that all known vouchers (from NFRC, CNC, and UASM) were in fact referable to *S. purpurascens* (Packard). Schmidt and Lawrie (1999) concluded that *S. argenteomaculatus* does not occur west of MB in Canada. However, recent confirmation of material from northern BC in the CNC, and the discovery of probable *S. argenteomaculatus* from boreal SK indicate that it does occur in the west, and it probably occurs in boreal AB, although this is unconfirmed.

8 ***Sthenopis purpurascens*** – Includes *quadriguttatus* (Grote), a recently designated synonym (Nielsen et al. 2000). This inclusion was not accepted by Handfield (2002) but it is supported by lack of mitochondrial DNA differences (BCS, unpublished data). Bowman's (1951) known vouchers labeled as "*S. argenteomaculatus* (Harris)" are referable to *S. purpurascens*, but the former species probably occurs in AB as well (see note 7 on that species).

9 ***Stigmella fuscotibiella*** – This species is known in AB only from near Sherwood Park but is probably more widely distributed.

10 ***Stigmella populetorum*** – This species is known in AB only from two female specimens from near Sherwood Park, which cannot be identified with certainty; they could be *S. aromella* (Wilkinson and Scoble).

10.1 ***Ectoedemia canadensis*** – This species is known only from the holotype (now lost), reared from mines on River Alder (*Alnus tenuifolia* Nutt.; Betulaceae), collected at Roger's Pass, BC, on 19 August 1915 by A. Braun. It probably occurs in adjacent AB as well.

11 ***Ectoedemia weaveri*** – Newly discovered in North America from the Birch Mountains, collected by D. A. Macaulay and S. Dunne in 2004.

13 ***Antispila aurirubra*** – AB specimens are not identified with certainty. This species was discovered in the Edmonton area in 2006 by J. J. Dombroskie and A. Rose; it is probably more broadly distributed. Larvae are blotch miners of *Cornus* species (Cornaceae).

14 ***Cauchas cockerelli*** – Known in AB from Steveville, Sundre, and Waterton Lakes National Park.

15 ***Cauchas simpliciella*** – Known in AB only from Waterton Lakes National Park.

19 ***Lampronia capitella*** – The identity of specimens currently determined as *L. capitella* in NFRC is not certain; O. Pellmyr and D. Davis (personal communication) suggest that these may in fact be *L. oregonella* Walsingham. The genus *Lampronia* is poorly known; a revision of the group is currently underway by Pellmyr and Davis.

20 ***Lampronia taylorella*** – Known in AB only from Blairmore and near Lac La Biche.

21 ***Lampronia aenescens*** – Known in AB from the Porcupine Hills.

22 ***Lampronia sublustris*** – Type locality: Waterton Lakes National Park, AB.

23 ***Lampronia humilis*** – Known in AB only from the Edmonton area, the Winfield area, and Gogo Lake (north of Fort McMurray).

24 ***Tetragma gei*** – Known in AB only from the Porcupine Hills; collected by GRP and D. W. Langor in 2002.

25 ***Greya piperella*** – This species has a new status since Hodges et al. (1983); it was previously treated as a synonym of *G. punctiferella* (Walsingham) (Davis et al. 1992).

26 ***Greya obscuromaculata*** – This species is known in AB only from Waterton; it was probably collected by J. H. McDunnough.

27 ***Greya politella*** – The single AB specimen, collected near Lac La Biche by GRP in 1994, is not determined with certainty. In Canada, this species is otherwise restricted to the BC interior.

28 ***Greya enchrysa*** – This species is known in AB only from Waterton; it was collected by J. H. McDunnough in 1923.

29 ***Greya variata*** – This species is known in AB only from Waterton; it was probably collected by J. H. McDunnough. Type locality: Glacier National Park, MT.

30 ***Greya subalba*** – Hodges et al. (1983) mistakenly placed the author in parentheses. This species is known in AB only from Waterton; it was probably collected by J. H. McDunnough. Type locality: Glacier National Park, MT.

31 ***Tegeticula yuccasella*** – This species occurs naturally in AB only at two sites near Onefour, the only locations for native populations of its host plant (*Yucca glauca* Nutt. ex Fraser; Agavaceae), with which it has a well-documented mutualistic relationship. It has been assessed as "endangered" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2009a) and is protected under Canada's Species At Risk Act (SARA 2008). It is also being assessed by the Scientific Subcommittee of Alberta's Endangered Species Conservation Committee, although the Alberta Wildlife Act does not formally extend protection to invertebrate species at the time of writing. It has recently been documented at several sites (Lethbridge, Medicine Hat, Etzikom, Olds) with transplanted *Y. glauca* (GRP and GGA, unpublished data).

32 ***Tegeticula corruptrix*** – In AB this species is found only near Onefour, the only site with its host plant (*Yucca glauca* Nutt. ex Fraser; Agavaceae). *Tegeticula corruptrix* is closely related to the pollinating species *T. yuccasella* (Riley), but it "cheats" by feeding on the host without pollinating it. It has been assessed as "endangered" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2009a) and is protected under Canada's Species At Risk Act (SARA 2008).

33 ***Prodoxus quinquepunctella*** – This species is a stem borer of yucca (*Yucca glauca* Nutt. ex Fraser; Agavaceae). In AB *P. quinquepunctella* is known only from Onefour, at one of the two sites where its host plant occurs. It has been assessed as "endangered" by the

Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2009a) and is protected under Canada's Species At Risk Act (SARA 2008).

33.1 ***Phylloporia bistrigella*** – This species is known from boreal forest habitat in SK; it probably occurs in AB.

34 ***Coptotriche admirabilis*** – Known in AB only from a single specimen collected by J. J. Dombroskie at Buffalo in 2006.

35 ***Haplotinea insectella*** – A pest of stored grain (Arnett 1993).

36 ***Homosetia bifasciella*** – This species was collected for the first time in western Canada near Sherwood Park, AB, by GRP in 2008.

37.1 ***Homosetia marginimaculella*** – This species is known from boreal forest habitat in SK; it probably occurs in AB.

39 ***Nemapogon* sp. nr. *acapnopennella*** – This species is similar externally to *N. acapnopennella* but the two species have clear genitalic differences. It is probably undescribed. It has been collected in Edmonton, near Lac La Biche, and near Zama City, as well as in SK and MB. It may be the same as an unidentified species near *N. acapnopennella* reported from QC by Handfield et al. (1997).

40 ***Nemapogon auropulvella*** – Known in AB from two specimens collected near Sherwood Park in July 2007 by GRP. Forbes (1923) reported the species from the eastern United States "...westward to BC," but no AB records were known before the 2007 specimens were collected. This species rarely comes to light; it is probably more abundant than collection records indicate.

41 ***Nemapogon granella*** – A pest of grain and dried fruit (Arnett 1993).

43 ***Nemapogon tylodes*** – This species is known in AB only from near Sherwood Park (collected by GRP in 2004); it is probably more widely distributed in the boreal forest.

44 ***Tinea irrepta*** – Type locality: Nordegg, AB.

45 ***Tinea pellionella*** – Hodges et al. (1983) mistakenly left the author out of parentheses. This species is an occasional pest of woollen clothing (Arnett 1993). The report of *T. grumella* Zeller by Bowman (1951) is probably referable to this species.

46 ***Niditinea fuscella*** – Replacement name for *N. spretella* ([Denis and Schiffermüller]) (Robinson 2003). Determinations of specimens in the UASM have not been recently confirmed.

48 ***Monopis crocicapitella*** – Most early records in Canada are referable to *M. laevigella* ([Denis and Schiffermüller]). The only confirmed record of *M. crocicapitella* in AB is a single specimen from near Sherwood Park, collected in 2004 (GRP), but this species is probably more widely distributed in urban areas. It feeds on seeds and dried vegetable matter and was probably introduced from the Old World.

49 ***Monopis laevigella*** – This Holarctic species has long been confused in North America with *M. crocicapitella* (Clemens). It is widespread in the boreal forest, where it feeds on skin, fur, and other material of animal origin.

52 ***Elatobia carbonella*** – Hodges et al. (1983) mistakenly left the author out of parentheses. It was treated by Bowman (1951) as *E. martinella* Walker, an Old World species.

53 ***Tineola bisselliella*** – An occasional pest of woollen clothing (Arnett 1993).

54 ***Amydria effrentella*** – A second, undescribed *Amydria* species near *A. effrentella* has recently been found in AB at Tolman Bridge (D. Davis, personal communication).

55 ***Taleporia walshella*** – Recently transferred from the genus *Solenobia* (Sauter and Hättenschwiler 2003). This species is known in AB from Cypress Hills, Jasper, and near Zama City.

56 ***Dahlica triquetrella*** – Recently transferred from the genus *Solenobia* (Sauter and Hättenschwiler 2003). This species was introduced from Europe; it is known in North America only as a wingless parthenogenetic race, but a sexual race exists in Europe (Leech and Sugden 1967). It is found in AB in locations associated with humans, primarily on the outside of buildings.

57 ***Hyaloscotes fragmentella*** – Listed as "ident. uncertain" in Hodges et al. (1983).

58 ***Hyaloscotes pithopoera*** – Known in AB only from Banff.

59 ***Tinagma obscurofasciella*** – Known in AB from three specimens collected in Waterton Lakes National Park in June 1938 by J. H. McDunnough.

60 ***Tinagma pulverilinea*** – Type locality: Glacier National Park, MT. This species includes *leucaspis* Braun (type locality: Aweme, MB), a recently designated synonym (Gaedike 1990). The latter was reported from the Waterton area by Bowman (1951), but no AB specimens are known. Bowman's Waterton record may refer to the Waterton specimens in the CNC currently determined as *T. obscurofasciella* (Chambers). A single specimen in the UASM, from Edmonton (5 June 1927) was determined as *T. pulverilinea* by Bowman, but it is not the basis of his 1951 checklist records and it is not *T. pulverilinea*; it appears to be an undescribed *Tinagma* species. Because of Waterton's proximity to Glacier National Park there is no reason to doubt the species' occurrence there, but owing to Bowman's identification error and the taxonomic problems in the group the validity of Bowman's record is uncertain.

61 ***Tinagma giganteum*** – This species is known in AB from Cypress Hills and Waterton Lakes National Park. Type locality: Glacier National Park, MT, "on cliffs on the side of Goat Mtn."

62 ***Tinagma brunneofasciatum*** – Type locality: Laggan [= Lake Louise], "Mt. St. Piran, 8000–9000 Ft."

64 ***Bucculatrix frigida*** – Type locality: Jasper.

66 ***Caloptilia alnivorella*** – This species was listed by Bowman (1951) as *C. alnivorella pulchella* (Chambers); *C. alnivorella* is a valid AB record, but *C. pulchella* is now considered to be a separate species, which is not likely to be found in AB.

68 ***Caloptilia betulivora*** – This species probably occurs in AB but no accurately determined vouchers are known. It was reported from the Touchwood Lake area of AB by Pohl et al. (2004b), but voucher specimens from that study in the NFRC were recently re-examined by GRP and are actually *C. invariabilis* (Braun). Several other specimens in NFRC that had been previously identified as *C. betulivora* await re-examination; most are probably *C. invariabilis* but some may indeed be correct.

72 ***Caloptilia fraxinella*** – Treated by Prentice (1965) (although no AB records are presented there) as *C. cuculipennella* Hübner, a Palaearctic species. Introduced to AB in the 1990s from eastern North America, *C. fraxinella* is an occasional pest of ornamental ash trees (Pohl et al. 2004c).

73 ***Caloptilia invariabilis*** – This species was misidentified as *C. betulivora* McDunnough by Pohl et al. (2004b); see note 68 on the latter species.

74 ***Caloptilia murtfeldtella*** – Known in AB only from the Waterton area.

75.1 ***Caloptilia rhoifoliella*** – This species is known from BC and SK; it probably occurs in AB.

85 ***Phyllonorycter apparella*** – Includes *atomariella* (Zeller), *ontario* (Freeman), and *tremuloidella* (Braun), all recently designated synonyms (Davis and Deschka 2001). This species is often misidentified as *P. salicifoliella* (Chambers). The "*salicifoliella* complex" referred to by Prentice (1965) probably includes at least some records of *P. apparella*.

87 ***Phyllonorycter nipigon*** – This species has regularly been misidentified as *P. salicifoliella* (Chambers).

88 ***Phyllonorycter salicifoliella*** – Includes *kenora* (Freeman), a recently designated synonym (Davis and Deschka 2001). This taxon was treated by Prentice (1965) as a complex of three species near *P. salicifoliella*. Most records of this species on *Populus* species are incorrect, and are actually *P. apparella* (Herrich-Schäffer), or *P. nipigon* (Freeman), or perhaps other species.

88.1 ***Phyllonorycter scudderella*** – This species occurs in interior AK and in eastern North America; it probably occurs in AB.

89 ***Phyllocnistis populiella*** – An occasional pest of Trembling Aspen.

92 ***Kessleria parnassiae*** – Known in AB only from Nordegg, collected by K. Bowman in the 1920s.

95 ***Argyresthia calliphanes*** – See note 97 on *A. goedartella*. This species was reported from "across western Canada" by Covell (1984).

95.1 ***Argyresthia columbia*** – This species is known from southeastern BC; it probably occurs in southwestern AB where its host plant (Western Larch) occurs.

96.1 ***Argyresthia flexilis*** – This species is known globally only from northern MT but is expected to occur in southern AB where its host plant (Limber Pine) occurs.

97 ***Argyresthia goedartella*** – According to Forbes (1923), this species is not widely distributed in North America, and most reports of it actually refer to *A. calliphanes* Meyrick. The species differences have not been clearly defined, and AB records are retained under the name *A. goedartella* pending further taxonomic work.

100 ***Argyresthia monochromella*** – Known in AB only from the Waterton area.

105 ***Ypsolopha dentella*** – Treated historically as *Cerostoma xylostella* (Linnaeus) by Forbes (1923) and others. This species was collected for the first time in AB at Olds by E. Mengersen in 1998. It has since been discovered near Sherwood Park (collected by GRP in 2007).

106 ***Ypsolopha dentiferella*** – Listed by Bowman (1951) as *Harpipteryx dentiferella frustrella* [sic] (Walsingham). *Ypsolopha frustella* is currently considered to be a distinct species, but we know of no way to separate it from *Y. dentiferella* and we suspect that it is a synonym; it was treated thus by McDunnough (1939b). All AB records are listed here under the latter name. For details, see note E6 on *Y. frustella* in the Excluded Taxa section.

109 ***Ypsolopha flavistrigella*** – Collected for the first time in AB at Olds by E. Mengersen in 1986. It has since been collected near Sherwood Park (by GRP in 2006).

110 ***Ypsolopha rubrella*** – Known in AB only from specimens collected in Waterton by J. H. McDunnough in 1923.

112 ***Plutella notabilis*** – Known in AB only from specimens collected at Moraine Lake by J. H. McDunnough in 1923.

114 ***Plutella xylostella*** – A common pest of cruciferous crops, this species undergoes several generations but rarely overwinters in AB (Dosdall 1994). Adults are long-distance migrators that are borne on high-altitude winds to AB (and as far north as Greenland) from the United States each year. Specimens collected in AB in early spring are probably survivors from the previous year's AB populations.

115 ***Pseudoplutella porrectella*** – Baraniak (2007) recently erected the genus *Pseudoplutella* and moved this Holarctic species to it from the genus *Plutella*.

116 ***Plutelloptera haasi*** – This Holarctic species was thought to be confined to the Palaearctic region until recently. It is known in AB from Cypress Hills Provincial Park,

Jasper National Park, and Richardson River Dunes Wildland Park in the Canadian Shield, all collected since 2000. Baraniak (2007) recently erected the genus *Plutelloptera* for this and several other Palaearctic species that were previously placed in the genus *Plutella*.

119 ***Acrolepiopsis californica*** – First noted in AB (Pohl et al. 2005) under the name *lilii-ivora* Gaedike, a recently designated synonym (Landry 2007). This species is known in AB only from near Sherwood Park, collected by GRP for the first time in 2001.

120 ***Glyphipterix urticae*** – Known in AB only from Waterton Lakes National Park and Cypress Hills.

121 ***Glyphipterix sistes*** – Known in AB only from Barrhead, collected by D. A. Macaulay in 1998.

122 ***Glyphipterix juncivora*** – Known in AB only from Waterton, collected in 1923 by J. H. McDunnough.

124 ***Bedellia somnulentella*** – Known in AB from a single specimen collected near Sherwood Park by GRP on 4 August 2005. This species is probably more widespread in the province.

124.1 ***Lyonetia saliciella*** – This species is known from BC near Lake Louise, AB (Prentice 1965); it probably occurs in AB.

125 ***Lyonetia prunifoliella*** – Replacement name for *L. speculella* Clemens since Hodges et al. (1983).

126 ***Paraleucoptera albella*** – This species is known in AB from specimens collected near Sherwood Park by GRP; it is almost certainly more widely spread in the parkland areas of the province.

127 ***Pyramidobela quinquecristata*** – Known in AB only from Waterton Lakes National Park, collected in 2006 by J. J. Dombroskie.

128 ***Ethmia monticola*** – AB populations in the mountains are referable to the nominate subspecies; those in the southeastern prairies are referable to subspecies *fuscipedella* (Walsingham), which is otherwise unknown west of MB (Powell 1973).

129 ***Ethmia albicostella*** – Known in AB only from Cardston and Kananaskis.

133 ***Agonopterix chrautis*** – Known in AB only from the head of Pine Creek, near Calgary, collected by F. H. Wolley Dod in 1906. See note 137 on *A. flavicomella*.

133.1 ***Agonopterix sabulella*** – This species is known from boreal forest habitat in SK; it probably occurs in AB.

135 ***Agonopterix canadensis*** – Treated twice by Bowman (1951) and Prentice (1965), as *A. pallidella* Busck and *Martyrhilda sciadopa* Meyrick (both are synonyms). All records by Prentice (1965) are suspect; the only voucher specimen located in the NFRC was a misidentified *A. fusciterminella* Clarke.

136 ***Agonopterix arnicella*** – Known in AB only from Elkwater in the Cypress Hills.

137 ***Agonopterix flavicomella*** – There are no clear differences in females between this species and *A. chrautis* Hodges. Two female specimens in the UASM, from Edmonton, collected by K. Bowman, are not identifiable with certainty. The identity of the OLDS specimen has not been confirmed.

139 ***Agonopterix posticella*** – Known in AB only from Bindloss, collected by GGA in 2005.

142 ***Depressariodes hildaella*** – Known in AB only from near Lake Louise.

152 ***Depressaria artemisiae*** – Known in AB only from Edmonton, collected by K. Bowman in 1945.

153 ***Depressaria pastinacella*** – This introduced European species overwinters in cracks and crevices, including those in garages and woodpiles; it often emerges into buildings on warm winter days. It has arrived in AB since the time of Bowman and appears to have become established in the Edmonton area in the 1990s (GRP, unpublished data). In 2000 it reached high population levels in the Edmonton area and almost completely destroyed the seed crop of its host, Cow Parsnip (*Heracleum maximum* Bartr.; Apiaceae). Since then, *D. pastinacella* populations have stabilized at a much lower level.

154 ***Depressaria eleanorae*** – Specimens in the POHL and UASM collections (from the Edmonton area) may be intergrades of *D. eleanorae* and *D. juliella* Busck; more specimens (particularly of the more taxonomically informative females) are needed to explore the relationship of these species. According to Hodges (1974), *D. juliella* occurs in the Rocky Mountains and westward; *D. eleanorae* is known only in ON and ME. The UASM specimen, a male collected in Edmonton, was identified as "*Depressaria* prob. *eleanorae*" by R. W. Hodges in 1973, but was not mentioned in Hodges (1974).

156 ***Depressaria leptotaeniae*** – Known in AB only from Waterton, probably collected by J. H. McDunnough.

157.1 ***Nites atrocapitella*** – This species is known from boreal forest habitat in SK; it probably occurs in AB.

159 ***Perittia cygnodiella*** – Known in AB only from Edmonton, collected by J.-F. Landry in 1983.

160 ***Elachista dasycara*** – Replacement name for *E. albella* (Chambers, 1877) since Hodges et al. (1983) (Kaila 1999a). Known in AB only from Lethbridge, collected by R. M. White in 1932.

161 ***Elachista subalbidella*** – Known in AB only from near Elk Island National Park, collected by D. A. Macaulay in 2000.

162 ***Elachista ossuaria*** – Type locality: Saskatchewan Crossing.

163 ***Elachista aspila*** – Known in AB only from near Drumheller, collected by J.-F. Landry in 1982.

165 ***Elachista aurocristata*** – In early works (e.g., Braun 1948; Bowman 1951) this species included *E. ossuaria* Kaila. Of the three Bowman vouchers in the UASM, two are actually *E. ossuaria*; the third is a female of questionable identity. Valid AB records exist for Nordegg and Waterton, collected by J. H. McDunnough in the 1920s. *Elachista aurocristata* appears to be restricted to cordilleran regions. Type locality: Glacier National Park, MT. The female is unknown.

166 ***Elachista symmorpha*** – Known in AB from Onefour, collected by GRP and D. A. Macaulay in 2001.

167 ***Elachista aphyodes*** – Known in AB from a single specimen collected near Writing-On-Stone by GRP in 1996.

168.1 ***Elachista achrantella*** – This species is known from Burstall sand dunes, SK; it almost certainly occurs in adjacent AB.

169 ***Elachista epimicta*** – Includes *purissima* Braun, a recently designated synonym (Kaila 1997). Known in AB only from Nordegg and Saskatchewan Crossing.

170 ***Elachista virgatula*** – Replacement name for *E. albella* (Chambers, 1875) since Hodges et al. (1983) (Kaila 1997). This species is known in AB only from Cypress Hills, collected by J.-F. Landry in 1984.

171 ***Elachista albicapitella*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

171.1 ***Elachista stramineola*** – This species is known from Glacier National Park, MT; it probably occurs in adjacent AB.

172 ***Elachista fuliginea*** – Known in AB only from near Saskatchewan Crossing, collected by L. Kaila in 1994.

173 ***Elachista maritimella*** – Known in AB only from near Winfield, collected by C. D. Bird in 2000.

174 ***Elachista curufinella*** – Known globally from a single male specimen from Saskatchewan Crossing, collected by L. Kaila in 1994.

176 ***Elachista aranella*** – Known globally from a single female specimen from Beaver Lake, near Lac La Biche, collected by J.-F. Landry in 1994.

177 ***Elachista neithanella*** – Known in AB only from Fairview, collected by J.-F. Landry in 1984.

178 ***Elachista pyrrha*** – Known in AB only from Saskatchewan Crossing (type locality), collected by L. Kaila in 1994.

178.1 ***Elachista agilis*** – This species is known globally only from Glacier National Park, MT; it probably occurs in adjacent AB.

179 ***Elachista eleochariella*** – Known in AB only from Saskatchewan Crossing, collected by L. Kaila in 1994. It was recently recognized as a valid species by Kaila (1996).

180 ***Blastodacna bicristatella*** – There is confusion concerning the identity of *Blastodacna* species in North America because the published descriptions of the two described species (*B. curvilineella* (Chambers) and *B. bicristatella*) are too vague to permit reliable species identification. The name *B. bicristatella* is used here purely as a placeholder for the larger of the two known *Blastodacna* species in AB. This species may in fact be *B. bicristatella* but it is more likely that it represents an undescribed species. It is known in AB from Rochon Sands Provincial Park and from the Edmonton area. See note 181 on *B. curvilineella* regarding misidentified specimens.

181 ***Blastodacna curvilineella*** – This smaller of the two AB *Blastodacna* species is probably *B. curvilineella* but may prove to be something other than *B. curvilineella*, possibly an undescribed species; see note 180 on *B. bicristatella*. It is known in AB only from near Sherwood Park and Cypress Hills but is probably more widely distributed. Note that the Rochon Sands record and one of the Sherwood Park records mentioned by Pohl et al. (2005) actually refer to *B. bicristatella*.

182 ***Chrysoclista cambiella*** – Known in AB only from specimens collected in Waterton by J. H. McDunnough in 1923.

183 ***Scythris eboracensis*** – Known in AB only from Edmonton, collected by J.-F. Landry.

183.1 ***Scythris inspersella*** – Includes *aterrimella* (Walker) (described in *Gelechia*) and *epilobiella* McDunnough, recently designated synonyms (Landry 1991). It is known from northeastern BC and it probably occurs in adjacent AB.

184 ***Scythris noricella*** – Treated in Bowman (1951) and Hodges et al. (1983) under the name *magnatella* Busck, a recently designated synonym (Landry 1991). It is known in AB only from the Edmonton area and Nordegg.

187 ***Landryia impositella*** – *Landryia* is a replacement name for *Asymmetrura*, described by Landry (1991), which is a junior homonym of a fossil mammal genus (Kemal and Koçak 2006).

188 ***Landryia scintillifera*** – Known in AB only from Onefour, collected by J.-F. Landry.

189 ***Glyphidocera hurlberti*** – A recently described species, previously identified as *G. septentrionella* Busck in many collections.

190 ***Decantha tistra*** – Known in AB only from Kakwa Wildland Park, collected by D. A. Macaulay in July 2006.

194 ***Hofmannophila pseudospretella*** – This species was introduced from Europe and reported in Canada from "BC east to MB" by Hodges (1974), but no specific AB records were given. This species is a pest of such items as dried foods, fur, dead insects, seeds, corks, and carpets.

198 ***Coleophora rosaefoliella*** – Known in AB only from Edmonton, collected by K. Bowman in the 1940s.

200 ***Coleophora salicivorella*** – Known in AB only from a reared specimen collected at Brocket as a larva in June 1962, by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service.

201 ***Coleophora persimplexella*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

202 ***Coleophora accordella*** – Known in AB only from Nordegg, collected by J. H. McDunnough in 1921.

203 ***Coleophora corylifoliella*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

204 ***Coleophora alnifoliae*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

205 ***Coleophora comptoniella*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

206 ***Coleophora rosaevorella*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

208 ***Coleophora rosacella*** – Known in AB only from Tolman Bridge, collected by J.-F. Landry in 1983.

209 ***Coleophora mcdunnoughiella*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

210 ***Coleophora crinita*** – No AB specimens are known; Bowman's (1951) determination is questioned by J.-F. Landry (personal communication).

211 ***Coleophora duplicis*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

212 ***Coleophora dextrella*** – Known in AB only from near Lac La Biche, collected by J. Hammond in 1993.

213 ***Coleophora detractella*** – Known in AB only from Lethbridge and Dunvegan.

213.1 ***Coleophora prepostera*** – This species is known from Glacier National Park, MT; it probably occurs in adjacent AB.

214 ***Coleophora sparsipulvella*** – Includes *sparsiatomella* McDunnough, an unofficial synonym (J.-F. Landry, personal communication). This species is known from Onefour, Tolman Bridge, and Saskatchewan Crossing; it is probably widely distributed but is poorly known because dissection is required to identify it.

215 ***Coleophora tenuis*** – No AB specimens are known; Bowman's (1951) record is questioned by J.-F. Landry (personal communication).

217 ***Coleophora bidentella*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

218 ***Coleophora glissandella*** – Known in AB only from Onefour, collected by E. E. Sterns in 1956.

219 ***Coleophora glaucicolella*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

220 ***Coleophora maritella*** – This species is known in AB from near Zama City and Buffalo Lake (collected by GRP); it is probably more widespread wherever its host plant (*Juncus* species; Juncaceae) occurs.

221 ***Coleophora mayrella*** – Treated in older literature (including Bowman 1951) under the name *C. spissicornis* (Haworth), a synonym. This species was introduced from Eurasia to North America many years ago. Larvae feed exclusively on White Clover (*Trifolium repens* L.; Leguminosae) seeds and are an occasional pest of seed crops.

222 ***Coleophora trifolii*** – This species was introduced from Eurasia to North America many years ago; it was not reported from AB by Bowman (1951) but was common in the Edmonton area by the early 1990s. Larvae feed on seeds of sweet clover (*Melilotus* species; Leguminosae).

223 ***Coleophora deauratella*** – This species was introduced to the North American fauna from Eurasia after the publication of Hodges et al. (1983) and is spreading rapidly across North America. It was first recognized in AB at Beaverlodge in 2006 (collected by J. Otani), but examination of pinned specimens revealed a record from Dunvegan, collected by J.-F. Landry in 2003, and a series from Waterton, collected by GRP in 2005. Larvae feed on seeds of Red Clover and Alsike Clover (*Trifolium* species; Leguminosae) and are an occasional pest of seed crops.

226 ***Mompha definitella*** – This species has not recently been treated taxonomically, but it is illustrated in Hodges (1978) in the general section on Gelechioidea. This species was discovered in AB at Bindloss in 2005 by GGA.

227 ***Mompha eloisella*** – Known in AB only from Lethbridge, collected in 1932 by H. L. Seamans.

228 ***Mompha stellella*** – This species was discovered in AB at Buffalo in 2006 by J. J. Dombroskie.

229 ***Mompha unifasciella*** – Treated in older literature under the name *decorella* Stephens. This species probably overwinters as an adult; it is often found in buildings and garages during the winter. Outdoors it is found from May to September.

230 ***Mompha idaei*** – Replacement name for *M. tricristatella* Chambers.

231 ***Mompha terminella*** – Known in AB only from near Lac La Biche, collected by GRP in 1994.

232 ***Mompha raschkiella*** – Known in AB from a specimen collected by GRP at Sherwood Park in 2004 and a specimen collected by C. D. Bird near Winfield in 2004. This is a previously unpublished record for North America.

232.1 ***Mompha sexstrigella*** – Treated by Sinev (1996) as *Psacaphora complexa* Svensson, now considered a synonym (Koster and Harrison 1997). This species is known from Glacier National Park, MT (type locality); it probably occurs in adjacent AB.

234 ***Hypatopa insulatella*** – Discovered in AB by C. D. Bird at several sites in central AB between 2000 and 2002. The determination was made by D. Adamski. Included within this species is *rufopunctella* Dietz, a recently designated synonym (Adamski and Hodges 1996).

236 ***Oegoconia novimundi*** – Reported by Bowman (1951) as *O. quadripuncta* (Haworth), an Old World species. *Oegoconia novimundi* has recently been raised from synonymy and applied to North American populations (Huemer 1998); true *O. quadripuncta* is restricted to the Old World (J.-F. Landry, personal communication).

237 ***Taygete sylvicolella*** – Known in AB only from Edmonton. The genus *Taygete* was moved from the Gelechiidae by Landry (2002).

237.1 ***Gerdana caritella*** – This species is known from Beaverhead County, MT (Clarke 1941) and Waskesiu, SK (Prentice 1965) and may occur in adjacent AB.

237.2 ***Cosmopterix gemmiferella*** – This species is known from boreal forest habitat in SK; it probably occurs in AB.

238 ***Cosmopterix fernaldella*** – This species is known in AB only from the Birch Mountains and near Sherwood Park, but it is almost certainly more widely distributed. It is very localized around ponds with *Carex* spp., on which it is a leaf miner.

239 ***Eteobalea intermediella*** – A new addition to the North American fauna since the publication of Hodges et al. (1983). This species was introduced from Europe to control toadflax (*Linaria* species; Scrophulariaceae). Limited field releases were carried out in Lethbridge in 1998, but the species appears not to have become established in AB (Weeden et al. 2002).

240 ***Eteobalea serratella*** – A new addition to the North American fauna since the publication of Hodges et al. (1983). This species was introduced from Europe to control toadflax (*Linaria* species; Scrophulariaceae). It was released at six sites in AB between 1992 and 1996; it may not be established in AB (Weeden et al. 2002).

242 ***Walshia miscecolorella*** – This species was reported by Bowman (1951) as *W. amorphella* Clemens; *W. miscecolorella* was considered to be a synonym of *W. amorphella* at the time (McDunnough 1939b).

242.1 ***Sorhagenia baucidis*** – This species is known from boreal forest habitat in SK; it probably occurs in AB.

243 ***Metzneria lappella*** – Known in AB only from Elkwater, Lethbridge, and Medicine Hat.

243.1 ***Metzneria paucipunctella*** – This species was introduced from Europe for biocontrol of knapweed (*Centaurea* species; Compositae) in BC and MT (Weeden et al. 2002); it may be established and may spread into AB.

244 ***Isophrictis magnella*** – Known in AB from a series collected at Onefour on 4 August 1951 by D. F. Hardwick. The determination was made by S. Lee in 2004.

244.1 ***Isophrictis rudbeckiella*** – This species is known from Burstall, SK, which is very close to the AB border; it probably occurs in adjacent AB as well.

245 ***Monochroa harrisonella*** – Known in AB only from Waterton, probably collected by J. H. McDunnough.

246 ***Chrysoesthia drurella*** – In western Canada, this species has often been confused with *C. lingulacella* (Clemens); known AB specimens have been confirmed as *C. drurella* by GRP and J.-F. Landry.

247 ***Chrysoesthia lingulacella*** – The sole known AB record of this species was collected at Edmonton by K. Bowman in 1923, and its identity is not certain. It was identified by Bowman as *C. lingulacella*, a determination with which GRP tentatively agrees; it is clearly not *C. drurella* (Fabricius).

248 ***Aristotelia devexella*** – Known in AB only from Waterton (type locality).

251 ***Aristotelia rubidella*** – Known in AB only from Waterton, probably collected by J. H. McDunnough.

252 ***Deltophora sella*** – Known in AB only from Onefour and Sandy Point. Two subspecies are known, *atacta* (Meyrick) and *californica* Sattler; it is not known to which subspecies the AB populations belong.

253 ***Agnippe prunifoliella*** – This species has traditionally been placed in *Evippe*, a recently recognized synonym of *Agnippe* (Lee and Brown 2008).

253.1 ***Coleotechnites ardas*** – This species is known from Glacier National Park, MT; it probably occurs in adjacent AB.

255 ***Coleotechnites biopes*** – Known globally only from Cypress Hills Interprovincial Park of SK and AB. The type locality is in the SK portion of the park.

256 ***Coleotechnites blastovora*** – AB determinations are uncertain; they do not fit published host and phenologic information. McLeod (1962) reported the species as a needle tier of White Spruce, with adults emerging in midsummer. Larvae have been observed on White Spruce in AB that match the larval descriptions in McLeod (1962) and Ives and Wong (1988). However, adult specimens are required for certain determination, and no such vouchers are known from AB. All known AB specimens filed under the name *C. blastovora* in collections had emerged in early spring in aspen-dominated forest, and are probably misdetermined. The genus *Coleotechnites* is in need of revision to clarify the definitions of these and other species.

259 ***Coleotechnites gibsonella*** – Specimens in the Bowman collection at the UASM have not been dissected to confirm their identities.

261 ***Coleotechnites lewisi*** – Known globally only from Cowley, AB, but probably occurs across the range of its host, Limber Pine. This moth is of concern to conservationists because of the serious threat of White Pine Blister Rust (*Cronartium ribicola* J. C. Fisch; Uredinales) to its host. Limber Pine is currently being evaluated for possible protection by the federal and provincial governments.

262.1 ***Coleotechnites occidentis*** – This species is known from southeastern BC; it probably occurs in adjacent AB.

264 ***Coleotechnites starki*** – Needle miner and occasional pest of Lodgepole Pine. Type locality: Mount Eisenhower, near Banff, AB.

268 ***Carpatolechia belangerella*** – This species was moved from *Pseudotelphusa* by Lee and Brown (2008), but was erroneously misplaced back in *Pseudotelphusa* in Lee et al. (2009). Lee et al. (2009) also synonymized *oronella* (Walsingham) with *C. belangerella*.

269 ***Carpatolechia proximella*** – First recognized in the North American fauna after the publication of Hodges et al. (1983).

270 ***Prolita sexpunctella*** – Treated by Bowman (1951) under two synonyms: *longicornis* (Curtis) and *petulans* (Braun). The type locality of *petulans* is Moraine Lake, AB. *Prolita sexpunctella* and other species of *Prolita* were until recently placed in *Lita* Trietschke, 1833, a primary homonym of *Lita* Kollar, 1832 (Huemer and Karsholt 1999).

272 ***Prolita barnesiella*** – Known in AB only from specimens collected by J. J. Dombroskie at the Pakowki dunes in 2006.

275 ***Bryotropha plantariella*** – Discovered in North America after Hodges et al. (1983).

276 ***Bryotropha gemella*** – Known in western North America from a single female specimen collected in Edmonton in 2005 by 5-year-old Colin Deneka. The identification was confirmed by T. Rutten.

277 ***Bryotropha similis*** – First recognized in the North American fauna after the publication of Hodges et al. (1983). It includes *clandestina* (Meyrick), *pullifimbriella* (Clemens), and *tahavusella* (Forbes), all recently designated synonyms (Rutten and Karsholt 2004).

279 ***Bryotropha altitudophila*** – Known in northern AB from specimens collected by GRP and D. Kanashiro at Dunvegan in 2003. It is also known from the sand dunes at Burstall, SK, and almost certainly occurs in adjacent southern AB as well.

280.1 ***Gelechia dromicella*** – This species is known from boreal forest habitat in SK; it probably occurs in AB.

284.1 ***Chionodes iridescens*** – This species is known from boreal habitat in SK and NT; it probably occurs in adjacent AB.

284.2 ***Chionodes abitus*** – This species is known from the sand dunes at Burstall, SK; it almost certainly occurs in adjacent AB.

286 ***Chionodes kincaidella*** – Known in AB only from Onefour, collected by D. F. Hardwick in 1951.

287 ***Chionodes sistrella*** – Known in AB only from Onefour.

288 ***Chionodes landryi*** – Known in AB only from Onefour, the type locality, collected by J.-F. Landry in 1984.

289 ***Chionodes fructuaria*** – Known in AB only from Sandy Point, collected by J.-F. Landry in 1985.

290.1 ***Chionodes salicella*** – This species is known from Glacier County, MT; it probably occurs in adjacent AB.

291 ***Chionodes obscurusella*** – Includes *negundella* Heinrich, a recently designated synonym (Hodges 1999).

294 ***Chionodes innox*** – Known in AB only from Drumheller, collected by J.-F. Landry in 1982.

297 ***Chionodes ceanothiella*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

299 ***Chionodes praeclarella*** – Includes *labradorica* (Möschler) and *fluvialella* (Busck), recently designated synonyms (Hodges 1999b).

300 ***Chionodes psiloptera*** – Includes *abradescens* (Braun), a recently designated synonym (Hodges 1999b). This species is an occasional pest of turf grass and forage.

301 ***Chionodes agriodes*** – Includes *seculaella* (Clarke), a recently designated synonym (Hodges 1999b). This species is known in AB only from Lethbridge and Onefour.

302 ***Chionodes whitmanella*** – Known in AB only from Sandy Point, collected by J.-F. Landry in 1985.

303 ***Chionodes praeco*** – Known in AB only from Cypress Hills and Writing-On-Stone, all collected by J.-F. Landry in 1982.

304 ***Chionodes occlusa*** – Type locality: Waterton, AB.

306.1 ***Chionodes veles*** – This species is known from Whitehorse, YT, and mountains in MT; it probably occurs in southern AB in the Rocky Mountains.

308 ***Chionodes ensis*** – Known in AB only from Lake Louise, collected by J. D. Lafontaine in 1982.

309 ***Chionodes continuella*** – Includes *brumella* (Clemens), a recently designated synonym (Lee et al. 2009).

311 ***Chionodes offectus*** – Known in AB only from Nordegg, collected by J. H. McDunnough in 1921.

312 ***Chionodes metallica*** – Known in AB only from Drumheller and Waterton.

314 ***Chionodes nigrobarbata*** – Type locality: Waterton, AB.

315 ***Chionodes braunella*** – Includes *loetae* Clarke, a recently designated synonym (Hodges 1999b). Known in AB only from Mount Eisenhower, near Banff, collected by R. H. Leuschner in 1973.

316 ***Chionodes permacta*** – Type locality: Moraine Lake, near Banff, AB.

316.1 ***Chionodes flavicorporella*** – This species is known from YT, MT, and MB; it probably occurs in AB.

318 ***Filatima albicostella*** – The sole AB record is a Nordegg specimen collected by K. Bowman in 1921, which does not look like BC specimens.

319 ***Filatima demissae*** – Known in AB only from Lloydminster. Determinations of UASM specimens are questionable. This species was misspelled "*dimissae*" by Hodges (1983).

320 ***Filatima normifera*** – Known in AB only from Lloydminster.

321 ***Filatima ornatifimbriella*** – Known in AB only from Nordegg.

322 ***Filatima serotinella*** – Determination of UASM specimens are uncertain.

325.1 ***Gnorimoschema clavatum*** – This species is known from the sand dunes at Burstall, SK; it almost certainly occurs in adjacent AB.

326 ***Gnorimoschema contrarium*** – Known in AB only from Nordegg.

327 ***Gnorimoschema dudiella*** – Known in AB only from Nordegg.

330 ***Gnorimoschema gallaespeciosum*** – Known in AB from a single specimen collected by C. B. Christensen at Moose Lake in 2005.

330.1 ***Gnorimoschema petiolatum*** – This species is known from the sand dunes at Burstall, SK; it almost certainly occurs in adjacent AB.

331 ***Gnorimoschema reichli*** – Known in AB from specimens collected by GRP and B. Sheen in Jasper National Park in 2006.

331.1 ***Gnorimoschema segregatum*** – This species is known from the sand dunes at Burstall, SK; it almost certainly occurs in adjacent AB.

332.1 ***Gnorimoschema spinosum*** – This species is known from the sand dunes at Burstall, SK; it almost certainly occurs in adjacent AB.

335 ***Scrobipalpula henshawiella*** – The AB record is based on some unverified specimens from Nordegg collected by J. H. McDunnough in 1921.

336 ***Scrobipalpula lutescella*** – This species was placed in *Scrobipalpulopsis* by Powell and Povolný (2001), but *Scrobipalpulopsis* was subsequently synonymized with *Scrobipalpula* by Lee et al. (2009). The species is known in AB only from Sunnydale (near Lloydminster), it was collected by P. F. Bruggeman in 1949.

337 ***Scrobipalpula psilella*** – Part of the *psilella* complex, which includes undescribed species (Powell and Povolný 2001).

338 ***Scrobipalpula radiatella*** – Known in AB only from Waterton, probably collected by J. H. McDunnough.

339 ***Scrobipalpa atriplicella*** – This species was moved from *Scrobipalpula* to *Euscrobipalpa* by Powell and Povolný (2001), but *Euscrobipalpa* was subsequently synonymized with *Scrobipalpa* by Lee et al. (2009).

339.1 ***Scrobipalpa instabilella*** – This species was added to the North American fauna after the publication of Hodges et al. (1983). It is known from the Great Sand Hills, SK and probably occurs in adjacent AB. See note 339 regarding placement in the genus *Scrobipalpa*.

340 ***Scrobipalpa macromaculata*** – Known in AB only from Lethbridge, collected by H. L. Seamans in 1922.

341 ***Scrobipalpa obsoletella*** – See note 339 regarding placement in the genus *Scrobipalpa*.

343 ***Caryocolum pullatella*** – Includes *subtractella* (Walker), a recently designated synonym (Huemer 1988).

345 ***Scrobipalpopsis petrella*** – moved from *Ptycerata* by Povolný (1993).

347 ***Battaristis concinnusella*** – Discovered in AB near Sherwood Park by GRP in 1998.

352 ***Anacampsis paltodoriella*** – Known in AB only from Onefour.

353 ***Sitotroga cerealella*** – Known in AB only from a specimen collected at Sandy Lake by J.-F. Landry in 1982. This species is usually an indoor pest of stored grain products but can also infest grain in the field (Robinson 2005).

355 ***Helcystogramma casca*** – Questionable status as a species distinct from *H. fernaldella* (Busck). There are no genitalic differences between the species, only color differences that seem to intergrade in AB. This species is known in AB only from Waterton Lakes National Park, but it probably occurs elsewhere in southern AB.

358 ***Dichomeris purpureofusca*** – Known in AB from Ministik Lake and from Waterton. Bowman's (1951) report of *D. nonstrigella* (Chambers) is probably based on records of this species, which was considered at the time to be a synonym of *D. nonstrigella* (McDunnough 1939b).

363 ***Dichomeris offula*** – Known in AB only from Edmonton and Nordegg.

365 ***Zenodoxus canescens*** – Known in AB only from Medicine Hat.

366 ***Zenodoxus sidalceae*** – Known in AB only from Orkney, near Drumheller.

369 ***Paranthrene tabaniformis*** – This species was reported from "across southern Canada and north into AK" by Eichlin and Duckworth (1988) and reported from AB by Engelhardt (1946) under the name *tricincta* (Harris), a synonym, but no verified AB records are known.

373 ***Sesia spartani*** – This recently described species was discovered in AB by M. Aurelian during examination of museum material from Edmonton and Tolman Bridge. The specimen from Edmonton is the only female of the species known. Numerous specimens of this species were collected in Edmonton in 2009.

374 ***Synanthedon pictipes*** – Known in AB only from Edmonton, collected by GGA.

375 ***Synanthedon tipuliformis*** – Probably introduced from Europe (Eichlin and Duckworth 1988). This species is known in AB only from Lethbridge and Edmonton.

377 ***Synanthedon viburni*** – Known in AB with certainty only from Mariana Lake. Other old AB records were recently redetermined and proved to be *S. fatifera* Hodges; that may also be the case with the CNC specimens, which have not been confirmed.

378 ***Synanthedon arctica*** – Known in AB from a single specimen collected from a bog near Sherwood Park by GGA, in a pheromone trap in late July 2009. This species was previously known from AK (Eichlin and Duckworth 1988) and from MB, QC, and NF (Rietz 1995).

380 ***Synanthedon canadensis*** – Known in AB only from Banff, the Waterton Lakes area, and Willmore Wilderness (Macaulay 2008).

384 ***Synanthedon albicornis*** – Known in AB only from Edmonton, collected by J. Belicek in 1971.

385 ***Synanthedon proxima*** – Known in AB only from recent collections by GGA at Tolman Bridge (2001) and south of Sherwood Park (2009).

386 ***Synanthedon polygoni*** – Reported by Eichlin and Duckworth (1988) "from AK to Mexico and east to UT". No voucher specimens are known from AB, but in June 2006, H. Proctor took a photograph of a freshly emerged specimen at Dry Island Buffalo Jump Provincial Park. The identity was confirmed by GGA and D. Holden. The image is on file at the UASM and the NFRC. Another specimen was photographed by T. Showalter in the Dry Island vicinity in 2009; larvae feed primarily on species of Umbrella-plant (*Eriogonum* spp.).

387 ***Synanthedon novaroensis*** – Trunk borer and occasional pest on spruce and pine trees.

388 ***Synanthedon sequoiae*** – Reported by Eichlin and Duckworth (1988) from "northern BC and in the Rocky Mountains to CO"; this description presumably includes southwestern AB, but no specific AB records are known.

389 ***Podosesia syringae*** – This species is a trunk borer on ash and lilac trees; it is an occasional pest of ornamental trees.

390 ***Carmenta giliae*** – Known in AB from Belly River, collected by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service in 1962, and from east of Milk River, collected by Royal Alberta Museum staff in 1999 (determined by T. Eichlin from a photograph).

390.1 ***Carmenta verecunda*** – This species was reported by Eichlin and Duckworth (1988) from "MB to WA"; no AB records are known but this species probably occurs in the southern part of the province.

394 ***Anthophila alpinella*** – The records of Bowman (1951) under the names *A. fabriciana* (Linnaeus) and *A. fabriciana alpinella* are all referable to *A. alpinella*. *Anthophila fabriciana* has a strictly Old World distribution.

395 ***Prochoreutis pernivalis*** – Hodges et al. (1983) mistakenly left the author out of parentheses.

396 ***Caloreas occidentella*** – Known in AB only from Waterton and Nordegg. Specimens in the CNC were all redetermined in the 1990s by J. Heppner. He attached a label to the Waterton specimens with the unpublished name "*C. canadensis*", and a label to the Nordegg specimens with the unpublished name "*C. hyperboreas*". It may be that the true *C. occidentella* does not occur in AB, but pending publication of formal species descriptions for these manuscript names, we continue to apply the name *occidentella* to AB specimens.

397 ***Caloreas multimarginata*** – Known in AB only from Nordegg.

398 ***Caloreas leucobasis*** – Bowman's (1951) record of this species in AB is based on a short series from Nordegg. The group is currently being revised by J. Heppner; on the basis of his determinations at the CNC, these specimens probably represent an undescribed species. The true *C. leucobasis* probably does not occur in western Canada, but we continue to apply the name to AB material pending further clarification.

399 ***Tebenna balsamorrhizella*** – Known in AB only from the Waterton area.

400 ***Tebenna onustana*** – Known in AB only from Moraine Lake.

401 ***Choreutis diana*** – Also treated by Bowman (1951) and Prentice (1965) as *Allonymema vicarialis* Zeller, a synonym.

402 ***Choreutis* sp. nr. *myllerana*** – Bowman (1951) applied the Old World name *C. myllerana* (Fabricius) to this undescribed species. When specimens in the CNC were examined by GRP in 2004, they had been labeled with the unpublished name "*Prochoreutis epichoris*" by J. Heppner.

403 ***Acleris albicomana*** – Placed until recently in *Croesia*, now considered a synonym of *Acleris* (Brown 2005).

404 ***Acleris curvalana*** – Placed until recently in *Croesia*, now considered a synonym of *Acleris* (Brown 2005).

411 ***Acleris fuscana*** – Pohl et al. (2004b) used the name *A. obligatoria* Park and Razowski in error for this species, on the basis of misinformation that the two species were synonymous and that *obligatoria* was the valid name. *Acleris obligatoria* is a valid species that is restricted to Asia.

416 ***Acleris schalleriana*** – All North American as well as some Eurasian specimens are members of the subspecies *viburnana* (Clemens) (Razowski 1966).

421 ***Acleris arcticana*** – Treated in Hodges et al. (1983) under the name *A. walkerana* Obraztsov, a recently designated synonym (Brown 2005).

424 ***Acleris logiana*** – Occurs in a white and a gray form; the latter was described as subspecies *placidana* (Robinson).

425 ***Acleris flavivittana*** – Known from boreal forest habitat in SK and from unconfirmed specimens collected in AB.

427 ***Acleris clarkei*** – Known in AB only from Rimbey.

429 ***Acleris paracinderella*** – Treated as a subspecies of *A. minuta* (Robinson) by Razowski (1966). *Acleris paracinderella* is known in AB only from Kananaskis, collected by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service in 1951.

430 ***Acleris gloveranus*** – A pest of spruce and fir trees in BC. This species is known in AB only from Lake Louise.

431 ***Acleris variana*** – A common pest of spruce and fir trees. A number of striking forms occur with markedly different patterns on the forewings.

433 ***Acleris inana*** – Bowman (1951) treated this species as *A. inana* and as *A. lipsiana* ([Denis and Schiffermüller]). The latter is strictly Palaearctic, and North American specimens referred to it are likely *A. inana* (Clarke 1987). The genitalia of the males Bowman identified as *A. lipsiana* in the UASM match the genitalia of *A. inana* figured by Razowski (1966) and Bowman's "*lipsiana*" specimens are presumed to all be this species. In the original description, the female referred to is probably misidentified, according to Clarke (1987).

435 ***Acleris bowmanana*** – Type locality: Edmonton, AB.

438 ***Acleris effractana*** – North American populations have been referred to for many years as *A. emargana* (Fabricius). However, according to Karsholt et al. (2005), all North American specimens are *A. effractana* and both species occur in Eurasia.

444 ***Phtheochroa modestana*** – Known in AB from two specimens collected at Nordegg by J. H. McDunnough in 1921; determination uncertain.

445 ***Phtheochroa villana*** – Specimens in the UASM that were originally determined as this species are of uncertain identity and await further taxonomic clarification of the species in this group.

447 ***Phtheochroa vulneratana*** – First recognized in the North American fauna after Hodges et al. (1983). This species is known in AB only from Moraine Lake.

449 ***Platphalonidia albertae*** – Known globally only from Nordegg, collected by J. H. McDunnough in 1921.

450 ***Platphalonidia dangi*** – Known globally only from Nordegg, on the basis of a single male specimen collected in 1923.

452 ***Platphalonidia imitabilis*** – Known globally only from Waterton, on the basis of two specimens collected by J. H. McDunnough in 1923.

454 ***Aethes biscana*** – This species is known in AB with certainty from the Sherwood Park area, collected by GRP; a series of Bowman's specimens identified as *A. biscana* was noted in the UASM by GRP in 2001 but could not be found again later. These specimens have either been redetermined or misplaced.

457 ***Aethes promptana*** – Razowski's (1997) treatment of "*A. promptana*" from eastern NA is incorrect; they represent the subsequently described *A. razowskii* (Sabourin and Miller) (Sabourin et al. 2002). However, AB specimens from Lac La Biche and Red Deer are correctly identified as *A. promptana*.

458 ***Aethes rutilana*** – This species is thought to be Holarctic in distribution (Razowski 1997, 2002), with subspecies *canadana* Razowski occurring in North America. Gillespie and Gillespie (1982) reported it as having been introduced from Europe. It is known in AB from Brooks and Erskine.

459 ***Aethes sexdentata*** – Previously misidentified as *A. angulatana* (Robinson) by many workers including Bowman (1951) and Razowski (1997). The true *A. angulatana* is not known to occur west of MN. The nominal subspecies occurs throughout North America (Razowski 2002).

460 ***Aethes smeathmanniana*** – Includes *scissana* (Walker), a recently designated synonym (Brown 2005).

461 ***Cochylidia subroseana*** – First recognized in the North American fauna after Hodges et al. (1983). It is known in AB only from Nordegg.

462 ***Cochylis dubitana*** – First recognized in the North American fauna after Hodges et al. (1983). The nominal subspecies occurs in North America (Razowski 2002).

463 ***Cochylis hoffmanana*** – Includes *marloffiana* (Busck), *toxcana* (Kearfott), and *zoxcana* (Kearfott), all recently designated synonyms (Brown 2005). This species was recently discovered in AB. It appears to be widespread; it is known from Dunvegan, Rocky Mountain House, and Crowsnest Pass.

464 ***Cochylis hospes*** – This species is known in AB only from a collection by J. J. Dombroskie and B. Proshek at Bindloss in 2008, but it is probably more widely distributed. It is an occasional pest of sunflowers (*Helianthus* spp.; Compositae).

465 ***Cochylis nana*** – Includes *albidana* (Walker), a recently designated synonym (Brown 2005). Bowman's specimens in the UASM (labeled as *Phalonia winniana* Kearfott, a synonym), were not listed in Bowman (1951); they were probably determined after 1951.

466 ***Eana argentana*** – The nominal subspecies occurs in North America (Razowski 2002).

467 ***Eana osseana*** – The taxon *niveosana* (Packard), type locality: Hopedale, Labrador, was previously considered to be distinct but is now considered to be a subspecies of *E. osseana* (Brown 2005). It probably applies to at least some AB populations.

468 ***Decodes fragariana*** – Known in AB only from Waterton Lakes National Park, from a specimen collected by J. J. Dombroskie in 2006.

469 ***Decodes horariana*** – According to Powell (1980), who had no AB specimens at the time, the division between *D. horariana* and *D. macdunnoughi* Powell is unclear, and he indicated that specimens from the northern Rocky Mountains are probably the latter species. However, recent dissections by GRP indicate that clear genital differences exist. AB specimens confirmed to be *D. horariana* are from Banff, Calgary, and Red Deer.

470 ***Decodes macdunnoughi*** – See note 469 on *D. horariana*. This is a boreal species, known from Edmonton, AB, and central SK.

471 ***Pandemis limitata*** – See note 472 on *P. canadana*.

472 ***Pandemis canadana*** – The validity of *P. canadana* as a species is questionable; Freeman (1958) thought this was probably just a western subspecies of *P. limitata* (Robinson). They co-occur without intergrades in the Edmonton area in AB, suggesting either that *P. canadana* is just a dark morph of *P. limitata* or that they are valid species. Further research is needed on these taxa.

473 ***Pandemis pyrusana*** – Known in AB only from the Waterton area.

475 ***Argyrotaenia repertana*** – Known in AB only from a series collected at Sunny Lake (near Lloydminster) by P. F. Brugemann in 1949.

485 ***Choristoneura conflictana*** – This species is a pest of Trembling Aspen; adults can be so abundant that they are a nuisance at lights.

486 ***Choristoneura fumiferana*** – Part of the *fumiferana* complex, including *C. fumiferana*, *C. occidentalis* Freeman, *C. biennis* Freeman, *C. pinus* Freeman, *C. lambertiana* (Busck), and *C. orae* Freeman, in which the species are not entirely discrete. *Choristoneura fumiferana* is a serious pest of spruce and fir trees.

487 ***Choristoneura occidentalis*** – Part of the *fumiferana* complex; see note 486 on *C. fumiferana*.

488 ***Choristoneura biennis*** – Part of the *fumiferana* complex; see note 486 on *C. fumiferana*. It is a pest of spruce.

489 ***Choristoneura pinus*** – Part of the *fumiferana* complex; see note 486 on *C. fumiferana*. It is a pest of Jack Pine.

490 ***Choristoneura lambertiana*** – Part of the *fumiferana* complex; see note 486 on *C. fumiferana*.

492 ***Archips striana*** – Hodges et al. (1983) mistakenly placed the author in parentheses.

495 ***Archips argyrospila*** – We include the taxon *mortuana* Kearfott in our concept of *A. argyrospila*, following the conclusions of Kruse and Sperling (2001). However, that synonymy has not been formalized as yet. This species exhibits considerable geographic variation in wing pattern, but there is considerable overlap of phenotypes. Treatment by Prentice (1965) probably includes misidentified specimens of other species.

497 ***Archips negundana*** – This species has localized, multi-year outbreaks on Manitoba Maple in Edmonton.

498 ***Archips cerasivorana*** – Social feeder in a large silken nest and an occasional pest of ornamental trees.

499 ***Archips purpurana*** – Old specimen determinations in the CNC are questionable; confirmed AB specimens are from Barrhead (collected by D. A. Macaulay in 1992), Moose Lake (collected by C. B. Christensen in 2005), and Sherwood Park (collected by GRP in 2005). *Archips purpurana* is a pest of many plant species.

500 ***Archepandemis borealis*** – This species was reported by Freeman (1965) from AB, but at least some of his AB records were later redetermined by Mutuura (1978) as *A. conifferana* Mutuura. Some AB specimens remain deposited in the CNC under the name *A. borealis*, but the validity of their identity is in doubt.

503 ***Lozotaenia hesperia*** – Known in AB from near Zama City and near Sherwood Park. AB specimens were originally misdetermined as *L. rindgei* Obraztsov; vouchers deposited at the CNC may still be labeled as such.

504 ***Aphelia alleniana*** – The nominate subspecies occurs in western Canada.

505 ***Aphelia koebelei*** – Known in AB from Nordegg and Jasper.

506 ***Clepsis fucana*** – Known in AB from a specimen collected by M. Schwarzfeld at Kootenay Plains in 2007; other specimens collected recently at Jasper have not been identified with certainty (J. J. Dombroskie, personal communication).

507 ***Clepsis kearfotti*** – Type locality: Mount Piran.

508 ***Clepsis persicana*** – Specimens from southwestern AB are subspecies *forbesi* Obraztsov, originally described as a separate species. They have a smaller silver dash on the forewing costa and a slightly more oblong uncus than nominate *persicana* (Obraztsov 1962b).

518 ***Sparganothis xanthoides*** – Also treated by Bowman (1951) as *S. irrorea* (Robinson), now considered simply a distinctive variety. The status of subspecies *inconditana* (Walsingham), which occurs in AB with the nominate subspecies, is not fully understood.

526 ***Anopina ednana*** – Known in AB from a single specimen collected near Sundre by E. Mengersen in 1989.

527 ***Anopina arizonana*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

531 ***Endothenia hebesana*** – Includes *daeckiana* (Kearfott), a recently designated synonym (Brown 2005). The nominal subspecies occurs in North America (Razowski 2003).

532 ***Endothenia infuscata*** – Known in AB from a single Bowman specimen in the UASM, of uncertain validity. The species is otherwise unknown in northwestern North America.

533 ***Endothenia nubilana*** – This species has often been referred to in North America (e.g., in Hodges et al. 1983) as *E. quadrimaculana*, a strictly Palaearctic species. Bowman (1951) and Heinrich (1926) referred to it as *E. antiquana nubilana* (*antiquana* Hübner is a synonym of *quadrimaculana*).

534 ***Taniva albolineana*** – An occasional pest of spruce.

535 ***Tia enervana*** – Treated in older works, including Heinrich (1926) and Bowman (1951), under the name *vulgana* (McDunnough), a recently designated synonym (Brown 2005). Known in AB only from Nordegg, which is the type locality of *vulgana*.

537 ***Bactra furfurana*** – The nominal subspecies occurs in North America (Razowski 2003).

538 ***Bactra verutana*** – This species occurs in AB in dark and light morphs; the dark morph was described as subspecies *albipuncta* Heinrich, now considered to be a synonym.

540 ***Paralobesia aemulana*** – Known from a single old (1943) specimen in the CNC, and a recent (2002) collection by GRP near Sherwood Park.

541 ***Paralobesia blandula*** – Known in western Canada only from two specimens collected in 2002 near Sherwood Park by GRP.

542 ***Lobesiodes euphorbiana*** – Introduced to North America for biological control of Leafy Spurge (*Euphorbia esula* L.; Euphorbiaceae). Field releases were made at Millet and Cardston in 1990 but larvae did not successfully overwinter. This species was released again at Cardston in 1994 but it appears not to have established a viable population (McClay et al. 1995). It has been successfully established in MB.

543 ***Ahmosia galbinea*** – Known in AB only from two specimens collected at Onefour in 1996 by GRP.

545 ***Zomaria interruptolineana*** – The surprising AB record of this otherwise eastern species comes from the Whitemud River valley in the Peace River area, collected by D. and S. Macaulay in 2008.

547 ***Apotomis removana*** – Includes *dextrana* (McDunnough), a recently designated synonym (Adamski and Peters 1986).

549 ***Apotomis tertiana*** – Includes *strigosa* (Heinrich), a recently designated synonym (Adamski and Peters 1986).

550 ***Apotomis bifida*** – Listed twice by Prentice (1965). The only confirmed AB specimen is from Entrance, between Hinton and Jasper. Others may exist, misidentified as similar species; it is externally identical to *A. capreana* (Hübner) and very close to *A. tertiana* (McDunnough). The AB specimen is reared, so the natural adult flight period is not known with certainty.

551 ***Apotomis capreana*** – Bowman's (1951) record of *A. frigidana* (Packard) for AB is referable to this species.

553 ***Apotomis paludicolana*** – This species is known in AB only from Edmonton and the Birch Mountains, but it is probably more widely distributed. It is restricted to bog habitats.

560 ***Olethreutes inornatana*** – Although Bowman (1951) reported this species from AB, all of his specimens (all from Edmonton) are actually *O. quadrifidum* (Zeller). According to C. D. Bird (personal communication), who examined these specimens in detail, the only true *O. inornatana* known in AB are ones he collected recently (between 2000 and 2005) at Dry Island Buffalo Jump Provincial Park.

561 ***Olethreutes quadrifidum*** – See note 560 on *O. inornatana* concerning Bowman's (1951) voucher specimens.

562 ***Olethreutes appendiceum*** – Bowman's (1951) record of *O. versicolorana* (Clemens) is referable to this species.

563 ***Olethreutes albiciliana*** – This species is known in AB from a single specimen collected in Willmore Wilderness Park by D. A. Macaulay on 15 July 2007. This species is otherwise known from BC, MB, and across eastern Canada and is probably more widely distributed in AB.

565 ***Olethreutes sordidana*** – Known in AB only from Nordegg and the Canadian Shield region.

568 ***Olethreutes coruscana*** – Listed by Bowman (1951) as *puncticostana* (Walker), a synonym. This is the "true" *puncticostana*, not in the sense of Heinrich (1926), who was dealing with misidentified *O. metallicana* (Hübner) (Miller 1985a). *Olethreutes coruscana* also includes *constellatana* Zeller, a recently designated synonym (Brown 2005).

569 ***Olethreutes metallicana*** – Heinrich (1926) and many workers since (including Bowman 1951) have treated the larger western form of this species (BC and AB populations) incorrectly as *O. puncticostana major* (Walsingham). The true *puncticostana* is a synonym of *O. coruscana* (Clemens), see note 568. All AB populations of *O. metallicana* are referable to subspecies *major* (Walsingham).

570 ***Olethreutes nordeggana*** – Includes *kennethanus* McDunnough (type locality: Edmonton), a recently designated synonym (Miller and Jalava 2000) that was missed by Brown (2005). Reports of *O. obsoletana* (Zetterstedt) in North America (e.g., Poole 1995) probably refer to this species. The type locality of *O. nordeggana* is Nordegg, AB.

573 ***Olethreutes polluxana*** – Known in AB only from Nordegg.

578 ***Olethreutes turfosana*** – Treated in older works under the name *intermistana* (Clemens), a recently recognized synonym (Jalava and Miller 1998).

584 ***Hedya ochroleucana*** – Bowman's (1951) report of *Evora hemidesma* (Zeller) is referable to this species.

585 ***Hedya nubiferana*** – Introduced from Europe to southwestern BC and eastern North America. It was first discovered in AB in 2003 and is known so far only from Tolman Bridge, where it has been collected on several occasions.

587 ***Ancylis subaequana*** – AB populations are probably members of subspecies *kinkaidana* (Fernald) (type locality: AK). Gilligan et al. (2008) treated *A. subaequana*, *A. galeamatana* (McDunnough), and *A. sheppardana* (McDunnough) as a complex.

588 ***Ancylis discigerana*** – Misidentified by Heinrich (1923) as *A. spiraeifoliana* (Clemens). Specimens in the Bowman collection are of uncertain identity; they may be misidentified *A. metamelana* (Walker) or *A. mira* Heinrich.

590 ***Ancylis tenebrica*** – Known in AB only from Bilby (type locality).

591 ***Ancylis laciniana*** – This taxon is part of a species complex, which includes *A. spiraeifoliana* (Clemens), *A. laciniana*, *A. burgessiana* (Zeller), *A. mira* Heinrich, and *A. fuscociliana* (Clemens). It is a difficult group in need of revision. Some or all of these taxa may prove to be races rather than distinct species. Further taxonomic work is required on this complex before the species can be reliably sorted out.

592 ***Ancylis burgessiana*** – See note 591 on *A. laciniana*.

593 ***Ancylis mira*** – See note 591 on *A. laciniana*.

594 ***Ancylis fuscociliana*** – See note 591 on *A. laciniana*.

603 ***Hystrichophora paradisiae*** – Known in AB only from Lethbridge.

604 ***Hystrichophora stygiana*** – We include *H. asphodelana* (Kearfott) within our concept of this species, following advice from T. Gilligan (personal communication) that it is conspecific. However, *H. asphodelana* has not been formally synonymized as yet. Variety *seraphicana* Heinrich, with white cilia on the hindwings, was described from WA and Glacier National Park, MT; it may be found in adjacent AB.

606 ***Hystrichophora vestaliana*** – Known in AB only from Dry Island Buffalo Jump Provincial Park, collected by C. D. Bird in 2005.

607 ***Rhyacionia buoliana*** – Known in AB from a single specimen reared from ornamental Austrian Pine (*Pinus nigra* Arnold; Pinaceae) in Edmonton, by G. Rankin in 2001. *Rhyacionia buoliana* was introduced to North America many years ago from Europe. At the time of writing it is not abundant in AB and may not be established in this province.

608 ***Retinia albicapitana*** – This species is an occasional pest of pines; it feeds on twigs, bark, and pitch. This and other species of *Retinia* were placed in the genus *Petrova* for many years; Lerault (1978) synonymized *Petrova* with *Retinia*, but this has only recently been widely accepted (Brown 2005).

609 ***Retinia metallica*** – Includes *luculentana* (Heinrich), a recently recognized synonym (Brown 2005).

610 ***Retinia gemistrigulana*** – First collected in AB on northern survey trips to Cornwall Lakes Wildland Provincial Park (2002) and Birch Mountains Wildland Provincial Park (2004) by G. J. Hilchie and D. A. Macaulay.

613 ***Barbara colfaxiana*** – Two subspecies are known: *coloradensis* (Heinrich) from CO and *taxifoliella* (Busck) from MT. It is not known if AB specimens are members of either of these subspecies.

615 ***Phaneta albertana*** – Known in AB (and possibly globally) only from Lethbridge and vicinity.

617 ***Phaneta indeterminana*** – This taxon may be conspecific with *P. awemeana* (Kearfott), according to Miller (1983c).

618 ***Phaneta umbrastriana*** – This species includes *roseoterminana* (Kearfott) and *subcandida* Heinrich, both recently designated synonyms (Brown 2005). The type locality of *subcandida* is Bilby, AB; it was described as a subspecies of *P. formosana* (Clemens).

619 ***Phaneta formosana*** – Bowman's (1951) record, and at least some AB specimens, probably refer to *subcandida* Heinrich, which was once considered to be a subspecies of *P. formosana* but is now considered to be a synonym of *P. umbrastriana* (Kearfott). The AB record by Gilligan et al. (2008) is based on *subcandida* type series material in the USNM which is probably all referable to *P. umbrastriana* (J. Brown, personal communication).

620 ***Phaneta corculana*** – Known in AB only from the Waterton area.

621 ***Phaneta citricolorana*** – Known in AB from a single specimen collected at Fort Assiniboine by D. A. Macaulay in 2002. This species is also known from Cypress Hills and Saskatoon, SK, and almost certainly occurs more widely in adjacent AB.

622 ***Phaneta amphorana*** – This species is known in AB with certainty only from Calgary but probably is more widespread.

623 ***Phaneta refusana*** – According to Miller (1971), all known reports of this species in North America, other than the holotype from James Bay, ON, are in fact referable to *P. verna* Miller; see note 624 on that species. This may be true in eastern North America; however, all examined AB material is in fact true *P. refusana*. True *P. refusana* has also been collected recently in MN (D. Wright, personal communication). The division between these species requires further investigation.

624 ***Phaneta verna*** – This species was described by Miller (1971) for the species that Heinrich (1926) and most subsequent workers erroneously referred to as "*P. refusana* (Walker)" (see note 623 for details). Although Miller was correct that most "*P. refusana*" specimens in North America are in fact *P. verna*, all of the AB material examined by GRP has been confirmed as true *P. refusana*, as was reported by Bowman (1951). It is not known if *P. verna* occurs in the province and this matter requires further investigation.

627 ***Phaneta oregonensis*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

628 ***Phaneta parmatana*** – Includes *perfuscana* (Heinrich), *crispana* (Clemens), *alterana* (Heinrich), *sinestrigana* (McDunnough), and *kennebecana* (Kearfott), all recently designated synonyms (Brown 2005).

629 ***Phaneta convergana*** – Known in AB only from Calgary and Lavoy.

630 ***Phaneta influana*** – Known in AB only from Lethbridge, Olds, and Tolman Bridge.

631 ***Phaneta lapidana*** – Known in AB only from Buffalo Lake and Rochon Sands, collected by C. D. Bird.

632 ***Phaneta ornatula*** – Known in AB only from a specimen collected at Big Knife Provincial Park by C. D Bird in 2008 and determined by D. Wright. This species is probably more widely distributed across the grasslands region in AB.

634 ***Phaneta rupestrana*** – Known in AB only from Nordegg and Calgary.

637 ***Phaneta nepotinana*** – Treated in the Appendix of Heinrich (1923).

638 ***Phaneta spectana*** – Known in AB only from Edmonton.

639 ***Phaneta misturana*** – Known in AB only from Opal.

640 ***Phaneta parvana*** – Unsubstantiated record in Bowman (1951); no AB voucher specimens are known.

641 ***Phaneta fertoriana*** – Treated in the Appendix of Heinrich (1923).

642 ***Phaneta crassana*** – Known in AB from a recent collection at Onefour as well as an old unconfirmed record from Lethbridge.

646 ***Phaneta delphinoides*** – Known in AB only from Lethbridge.

647 ***Phaneta modicellana*** – Treated in the Appendix of Heinrich (1923).

650 ***Phaneta infimbriana*** – Specimens of the paler eastern form are referable to subspecies *candidula* Heinrich. This name may apply to all specimens east of the Pacific coast.

652 ***Phaneta youngi*** – Known in AB only from the type series collected at Waterton (elevation 2100 m) by C. H. Young, and from two specimens collected at Red Rock Canyon in Waterton Lakes National Park by GRP and D. W. Langor in 2005. The type series should be in the CNC, but GRP was unable to find it there in 2004.

655 ***Eucosma fandana*** – Discovered in AB by GGA and J. J. Dombroskie at the Pakowki dunes in 2006 and subsequently collected at Edgerton. *Eucosma fandana* includes *gandana* Kearfott, a recently designated synonym (Wright 2007a).

657 ***Eucosma fernaldana*** – Discovered in AB at the Pakowki dunes by J. J. Dombroskie in 2006; specimens were more recently identified among older material collected at Edgerton by GGA in 2002.

658 ***Eucosma caniceps*** – Known in AB only from a single specimen from Onefour collected by D. F. Hardwick in 1951.

659 ***Eucosma ragonoti*** – Known in AB only from Champion, Bindloss, and Buffalo.

660 ***Eucosma serpentana*** – Treatment by Heinrich (1923) includes *E. ophionana* McDunnough, now considered to be a valid species.

663 ***Eucosma lathami*** – Known in AB only from Lethbridge and Tolman Bridge.

664 ***Eucosma agricolana*** – Also treated by Heinrich (1923) and Bowman (1951) as *pergandeana* Fernald, now a synonym. *Eucosma agricolana* was additionally treated by Heinrich (1923) as *argentialbana* (Walsingham), which was considered at that time to be a valid species but is now considered to be a subspecies.

666 ***Eucosma vagana*** – Treated in error by Heinrich (1923) under the name *mandana* Kearfott, which is now a synonym of *E. comatulana* (Zeller) (Brown 2005).

667 ***Eucosma galenapunctana*** – Known in AB only from Lethbridge, collected by H. L. Seamans in 1922.

668 ***Eucosma serapicana*** – Treated in the Appendix of Heinrich (1923).

669 ***Eucosma watertonana*** – Known in AB only from Waterton (type locality) and Lethbridge.

670 ***Eucosma louisana*** – Known in AB only from Lake Louise (type locality), collected by G. S. Walley in 1938.

673 ***Eucosma recissoriana*** – Known in AB only from Cypress Hills, collected by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service in 1963. All of these specimens are reared, so the natural flight time of this species is uncertain.

674 ***Eucosma lolana*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

677 ***Eucosma heinrichi*** – This species was discovered recently in AB by GRP (in Jasper National Park in 2006) and GGA (in the Suffield National Wildlife Area in 2008); determinations were made by D. Wright.

679 ***Eucosma biplagata*** – Known in AB only from a specimen collected at Crowsnest Pass by D. C. Ferguson in 1966.

681 ***Eucosma landana*** – Known in AB only from Jenner Bridge, collected by GGA in 2004.

682 ***Eucosma simplex*** – Known in AB only from Calgary (type locality), collected by F. H. Wolley Dod.

684 ***Eucosma similiana*** – Accorded a new status as a full species since the publication of Hodges et al. (1983). *Eucosma similiana* was treated by Heinrich (1923) (who misspelled the specific epithet as *similana*) as a subspecies of *E. dorsisignatana* (Clemens).

686 ***Eucosma derelecta*** – Known in AB only from Bilby, collected by O. Bryant in 1924, and from a recent collection by GRP near Sherwood Park.

687 ***Eucosma excusabilis*** – Known in AB only from the Waterton area.

688 ***Eucosma nuntia*** – Known in AB only from the Blackfoot Hills (near Lloydminster) and Calgary.

689 ***Eucosma pulveratana*** – Bowman's (1951) record is unsubstantiated by voucher material; no other records of this species are known in western Canada.

690 ***Eucosma hohana*** – Known in AB only from Mount Piran (type locality) and Drumheller.

691 ***Eucosma suadana*** – Known in AB only from Scandia, collected by W. O. Nummi in 1956.

693 ***Eucosma conspiciendana*** – Known in AB from Waterton, Crowsnest Pass, and Tolman Bridge.

695 ***Pelochrista gelattana*** – Described recently by Wright (2007b); this species is known in Canada from a paratype specimen collected at Onefour (Manyberries Dominion Range Station) by D. F. Hardwick on 13 July 1951 as well as more recent specimens collected from Onefour and Dry Island Buffalo Jump Provincial Park by E. Mengersen and from Tolman Bridge by GGA.

696 ***Pelochrista scintillana*** – Specimens from the Rocky Mountains and Sierra Nevada are members of the subspecies *randana* (Kearfott). This name may apply to at least some AB populations.

697 ***Pelochrista corosana*** – Placed in *Eucosma* by Brown (2005) but moved to *Pelochrista* by Wright (2007b). Bowman's (1951) record is unsubstantiated by voucher material, but there is no reason to doubt it, as the species is known from MT (type locality).

698 ***Pelochrista mediostriata*** – This species was recently moved from *Eucosma* by Wright (2008). It is known in AB only from Lethbridge, Onefour, and the Pakowki dunes.

699 ***Pelochrista kingi*** – Heinrich's (1923) treatment of "*P. occipitana* (Zeller)" was based on this species, which has recently been recognized and described (Wright 2008). Most of Bowman's (1951) records of *P. occipitana* and *P. fuscosparsa* (Walsingham) are referable to this species; a few have been redetermined as other Eucosmini species (D. Wright, personal communication).

700 ***Epiblema abruptana*** – Known in AB only from Tolman Bridge, collected by B. Landry in 2003.

702 ***Epiblema obfuscana*** – Known in AB only from Moraine Lake.

704 ***Epiblema periculosana*** – Treated in the Appendix of Heinrich (1923).

705 ***Epiblema lyallana*** – Known in AB only from Lake Louise, collected by G. S. Walley in 1938.

707 ***Notocelia purpurissatana*** – Hodges et al. (1983) mistakenly left the author out of parentheses.

711 ***Gypsonoma nebulosana*** – Unsubstantiated record in Bowman (1951); no AB voucher specimens are known.

712 ***Gypsonoma parryana*** – Unsubstantiated record in Bowman (1951); no AB voucher specimens are known.

720 ***Zeiraphera canadensis*** – Treated by Heinrich (1923) as *Z. ratzeburgiana* (Ratzeburg), a similar Old World species. *Zeiraphera canadensis* is a common pest of spruce, on which it is a bud feeder.

721 ***Zeiraphera improbana*** – Treated by Heinrich (1923) and Prentice (1965) as *Z. diniana* (Guenée), a similar Old World species.

723 ***Zeiraphera unfortunana*** – Powell (1983) proposed the name *unfortunana* for the taxon previously known as *destitutana* Mutuura and Freeman. However, *unfortunana* Powell was not accompanied by a description, so it is a nomen nudum. The taxon *Z. unfortunana* was formally described by Ferris and Kruse (2008).

725 ***Pseudexentera oregonana*** – According to J. J. Dombroskie (personal communication), at least one other *Pseudexentera* species occurs in AB, but it has yet to be identified with certainty. These two species are variable and extremely similar externally, and more work is required on AB material.

728 ***Rhopobota naevana*** – Listed in Hodges et al. (1983) as *unipunctana* (Haworth), a recently designated synonym (Brown 2005). *Rhopobota naevana* is believed to be

Holarctic in origin (Lafontaine and Wood 1997; Razowski 2003) or introduced from Europe (Gillespie and Gillespie 1982).

729 ***Epinotia trigonella*** – Recent replacement name for *E. stroemiana* (Fabricius) (Brown 2005).

730 ***Epinotia sperana*** – Known in AB only from Nordegg and Jasper. Brown (1980) treated this species under the name "*jasperana*," which he described in his unpublished doctoral thesis.

731 ***Epinotia solandriana*** – Reported as introduced from Europe to BC in 1909 (Martineau 1984) but now thought to be Holarctic (Brown 1980; W. E. Miller, personal communication).

732 ***Epinotia medioviridana*** – Known in AB only from Waterton Lakes National Park, collected by J. J. Dombroskie in 2006.

735 ***Epinotia xandana*** – Discovered in AB by J. J. Dombroskie at a locality on the Battle River in the central part of the province in 2008. This species is probably more widespread in the parkland area of AB. It was treated by Heinrich (1923) under the name *yandana* (Kearfott), a synonym.

742 ***Epinotia albangulana*** – According to Heinrich (1923), this species is restricted to the far west of North America. Two AB specimens (from Jasper National Park and Kananaskis) in the NFRC are missing their abdomens but are tentatively assigned to this species.

744 ***Epinotia removana*** – Known in AB only from Waterton (type locality), collected by J. H. McDunnough in 1923.

747 ***Epinotia digitana*** – Known in AB only from Moraine Lake.

748 ***Epinotia nigralbana*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

749 ***Epinotia crenana*** – According to the unpublished doctoral thesis of Brown (1980), the North American "*E. crenana*" is a separate species from the European *E. crenana* and should be referred to as *E. columbia* (Kearfott). This unpublished opinion has not been widely accepted.

750 ***Epinotia arctostaphylana*** – Known in AB from Fort Chipewyan and Nordegg.

751 ***Epinotia nonana*** – Bowman's (1951) record is unsubstantiated by voucher material; the closest confirmed records are from MN (Miller 1987).

752 ***Epinotia aridos*** – This species is known in AB only from Jasper National Park, where it was collected by GGA and BCS on 27 June 2006. The specimen's identity was confirmed by J. J. Dombroskie (personal communication). It is otherwise known globally only from East Glacier, MT (type locality).

756 ***Epinotia seorsa*** – Known in AB from Crowsnest Pass, collected by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service in 1949.

758 ***Dichrorampha simulana*** – Includes *kana* (Busck), *capitana* (Busck), and *britana* (Busck), all recently designated synonyms (Brown 2005). This species is known in AB from Mount Piran and Moraine Lake.

759 ***Dichrorampha bittana*** – Includes *immaculata* McDunnough, a recently designated synonym (Brown 2005).

760 ***Dichrorampha radicicolana*** – Known in western Canada only from specimens collected at two localities in Waterton Lakes National Park in 2005 and 2007 by GRP.

761 ***Dichrorampha banana*** – Known in AB from two specimens collected at Lake Louise (Laggan) and Moraine Lake in July 1925 by O. Bryant. Both specimens are in the USNM.

765 ***Pammene perstructana*** – Includes *signifera* (Heinrich), a recently designated synonym (Brown 2005).

766 ***Pammene bowmanana*** – Known in AB from Nordegg (type locality) and the Caribou Mountains.

769 ***Grapholita imitativa*** – Known in AB from the Waterton and Calgary areas.

771 ***Grapholita interstinctana*** – Known in AB from Entrance and Kananaskis.

772 ***Grapholita dyarana*** – Known in AB only from Lethbridge.

773 ***Cydia bracteatana*** – Known in AB only from two reared specimens, from Saskatchewan Crossing and Robb, collected as larvae from Lodgepole Pine by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service. These specimens had been previously misidentified in the NFRC as *Grapholita caeruleana* Walsingham, which does not occur in AB.

774 ***Cydia rana*** – Known in AB only from Saskatchewan Crossing and Nordegg.

775 ***Cydia inopiosa*** – Known in AB only from Ribbon Creek and Saskatchewan Crossing, from a series of specimens collected as larvae and reared from infections of Commandra Blister Rust (*Cronartium commandrae* Pk.; Uredinales) on Lodgepole Pine, by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service. The specimens had been previously misidentified as *Grapholita caeruleana* Walsingham, which does not occur in AB. *Cydia inopiosa* includes *resinosae* (Freeman), a recently designated synonym (Brown and Miller 1983).

776 ***Cydia strobilella*** – Includes *youngana* (Kearfott), a recently designated synonym (Brown and Miller 1983).

781 ***Cydia nigricana*** – Includes *rusticella* (Clerck), a suppressed European name (Brown 2005).

784 ***Cydia toreuta*** – Treated by Gilligan et al. (2008) as a complex including *C. piperana* Kearfott and *C. ingens* (Heinrich).

785 ***Wockia asperipunctella*** – Discovered in North America after Hodges et al. (1983).

786 ***Schreckensteinia festaliella*** – Previously considered to be introduced to North America, but probably Holarctic in origin. This species was mistakenly reported as new in Canada by Pohl et al. (2005); in fact it was previously known in QC (Handfield et al. 1997).

787 ***Epermenia falcata*** – Known in AB only from near Sherwood Park, collected by GRP in 2002 and 2007. These specimens were originally identified by Pohl et al. (2005) as *E. imperialella* Busck, which does not occur in AB.

788 ***Epermenia canadensis*** – This species is known globally only from the holotype, collected at Cypress Hills by J.-F. Landry in 1982.

788.1 ***Epermenia albapunctella*** – This species is known from boreal forest habitat in SK; it probably occurs in AB.

789 ***Epermenia lomatii*** – Known in AB only from Edmonton, collected by K. Bowman in 1947.

790 ***Epermenia infracta*** – This species is known globally only from Nordegg (type locality); it was described from two female specimens (in the CNC). Male specimens were recently discovered in the UASM, collected by K. Bowman in 1923 (misidentifed and reported in Bowman (1951) as *Xyrosaris (= Zelleria) celastrusella* Kearfott; Yponomeutidae).

791 ***Ochromolopis ramapoella*** – Hodges et al. (1983) mistakenly placed the author in parentheses.

792 ***Alucita montana*** – Previously grouped with other North American *Alucita* species (*A. adriendenisi* Landry and Landry and *A. lalannei* Landry and Landry) and treated vari-

ously as *A. hexadactyla* Linnaeus or *A. huebneri* Wallengren, both Palaearctic species. The accuracy of published records before Landry and Landry (2004) is not certain; the records in the NFRC have been confirmed. All three *Alucita* species overwinter as adults and may be encountered in buildings in winter. *Alucita montana* was reported by Bowman (1951) as *A. huebneri*; *A. montana* was considered a synonym of it at the time.

793 ***Alucita adriendenisi*** – See note 792 on *A. montana*.

794 ***Alucita lalannei*** – See note 792 on *A. montana*.

797 ***Platyptilia percnodactylus*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

800 ***Gillmeria pallidactyla*** – Moved recently from *Platyptilia* (Gielis 1993).

801 ***Gillmeria albertae*** – Known in AB only from Lake Louise (type locality) and from Kakwa Wildland Provincial Park.

805 ***Paraplatyptilia albiciliatus*** – Moved recently from *Stenoptilodes* (Gielis 1993). AB populations are members of the subspecies *canadensis* (McDunnough) (type locality: Lilloet, BC; paratypes from Nordegg, Banff, Moraine Lake, and Waterton).

806 ***Paraplatyptilia shastae*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

807 ***Paraplatyptilia nana*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

808 ***Paraplatyptilia albidorsellus*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

809 ***Paraplatyptilia maea*** – Known in AB only from Moraine Lake.

810 ***Paraplatyptilia modesta*** – Known in AB from Hays, Lost River, and Writing-On-Stone Provincial Park.

811 ***Paraplatyptilia bowmani*** – Known in AB only from Nordegg (type locality).

813 ***Geina tenuidactylus*** – Known in AB only from Waterton, collected by J. H. McDunnough in 1923.

814 ***Capperia ningoris*** – This species was reported from AB by Bowman (1951), probably in error; Bowman's vouchers in the UASM have been examined by D. A. Macaulay and redetermined as *C. evansi* (McDunnough). A specimen reported from the Birch Mountains by Macaulay and Pohl (2005) has also been redetermined by D. A. Macaulay as *C. evansi*. *Capperia ningoris* (type locality: CA) probably does not occur in AB, but the name is retained here as an unverified record pending further collection and investigation.

815 ***Capperia evansi*** – Bowman's (1951) records of *C. ningoris* (Walsingham) and *C. raptor* (Meyrick) in AB are referable to this species.

816 ***Capperia raptor*** – This species was reported by Bowman (1951), probably in error; one Bowman voucher specimen in the UASM has been redetermined by D. A. Macaulay as *C. evansi* (McDunnough). The species is otherwise known only from CO, but the name is retained here as an unverified record pending further collection and examination.

817 ***Oxyptilus delawaricus*** – Known in AB only from Waterton, from a series of specimens collected by J. H. McDunnough in 1923.

818 ***Dejongia lobidactylus*** – Known in AB only from Jasper, collected by J. H. McDunnough in 1926.

819 ***Hellinsia fishii*** – Reported by McDunnough (1923a, 1927a) from Banff and Nordegg, but the specimens are not filed under *H. fishii* at the CNC; they have probably been redetermined as another species recently, perhaps *Oidaematophorus mathewianus* (Zeller).

820 ***Hellinsia gratiosus*** – Known in AB only from Banff.

824 ***Hellinsia pectodactylus*** – This Holarctic species was traditionally treated in North America under the name *stramineus* (Walsingham). It was recently recognized as conspecific with *H. pectodactylus*, which was described from Spain (Gielis 2003).

826 ***Hellinsia lacteodactylus*** – Known in AB only from Edmonton, collected by K. Bowman in 1918.

827 ***Hellinsia subochraceus*** – Known in AB from a single specimen collected at Dinosaur Provincial Park in 2000 by D. Lawrie.

828 ***Hellinsia sulphureodactylus*** – Known in AB only from Onefour, collected by J.-F. Landry in 1984.

830 ***Hellinsia arion*** – Discovered in 2000 by C. D. Bird and collected subsequently at several sites in the AB parkland.

834 ***Oidaematophorus phaceliae*** – Type locality: Waterton.

836 ***Oidaematophorus rileyi*** – Known in AB from Moraine Lake and the Waterton area.

838 ***Oidaematophorus castor*** – Known in AB from Moraine Lake and the Waterton area.

843 ***Ellabella editha*** – Known in AB only from Waterton Lakes National Park.

844 ***Carposina sasakii*** – Known in AB only from Edmonton, collected by K. Bowman in 1921. That collection may represent an unestablished introduction to the area, as this species has not been collected in AB since. This species has generally been known under the name *niponensis* Walsingham. Both *niponensis* and *sasakii* were described in July of 1900. However, Hua (1992) established that *sasakii* is the valid name. All North American specimens are members of the subspecies *ottawana* (Kearfott). Davis (1968) noted that *C. s. ottawana* probably represents a valid species but did not formally propose that combination in his revision of the group.

847 ***Galleria mellonella*** – Occurrence of this species in the wild in AB has not been documented. However, *G. mellonella* is often cultured in AB as food for reptile and amphibian pets. Larvae are pests of bees' nests, where they eat the wax combs.

848 ***Acallis gripalis*** – Known in AB only from Lethbridge.

850 ***Aglossa pinguinalis*** – Known in AB from specimens collected in Edmonton by GGA in 2008 and 2009. This species was introduced from Europe, where it is known to frequent outbuildings. The larvae feed on dung and grease and have been found on cadavers. Their natural habitat is probably in caves, where they feed on bat guano.

851 ***Aglossa caprealis*** – Known in AB from a single specimen, collected in Lacombe by M. Voorbij in 2002. Larvae are pests of stored products.

852 ***Aglossa cuprina*** – Known in AB (and western Canada) from a single specimen collected by C. D. Bird at Tolman Bridge in 2002. This is an introduced household pest that feeds on grease, but given the natural habitat in which it was found, it is probably established and more widely distributed in natural habitats in AB.

853 ***Hypsopygia costalis*** – Known in AB only from Olds, collected by E. Mengersen in 1998. It has not been collected since, despite intensive collecting in the area; it may not be established in AB. Larvae are pests of forage crops.

854 ***Dolichomia olinalis*** – Includes *infimbrialis* Dyar, a recently designated synonym.

855 ***Dolichomia thymetusalis*** – Moved from *Herculia* by Munroe et al. (1995).

857 ***Pococera aplastella*** – Many older records, including many in the Bowman collection and many records of the Forest Insect and Disease Survey of the Canadian Forest Service reported by Prentice (1965), have been redetermined by GRP as *P. asperatella* (Clemens), but some specimens in both of these series were correctly identified.

858 ***Pococera asperatella*** – Some older records may be misidentified in collections as *P. aplastella* (Hulst); see note 857 on that species.

859 ***Pococera baptisiella*** – Known in AB only from Onefour and Sandy Point.

860 ***Acrobasis indigenella*** – This species is known in AB from Bindloss (collected in 2004 by BCS) and Lethbridge (collected in 2005 by J. R. Byers).

862 ***Acrobasis betulella*** – Includes *hebescella* Hulst, a recently designated synonym (Neunzig 1986). Known with certainty in AB only from Empress, collected as larvae from Water Birch by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service in 1962. This species may occur more widely in southern AB, particularly in the Medicine Hat area.

863 ***Myelopsis minutularia*** – Includes *coniella* (Ragonot), a recently designated synonym (Neunzig 1986).

864 ***Myelopsis subtetricella*** – Also treated by Bowman (1951) under the name *obnupsella* Hulst, a synonym.

870 ***Vitula serratilineella*** – This species was previously considered a subspecies of *V. edmundsii* (Packard) but was reinstated as a full species by Neunzig (1990). However, there are no clear differences between *V. serratilineella and V. edmundsii*, and this situation warrants reexamination. Larvae live in bee and wasp nests and are also occasional pests in dried fruits. Adults can be found in buildings in winter, after emerging from bee nests in basements and walls.

872 ***Plodia interpunctella*** – This is a cosmopolitan species described from Europe, but of Nearctic origin and introduced to the Old World. It is a pest of stored seeds, dried fruit, nuts, dead insects, and fungi.

873 ***Ephestia elutella*** – This species was introduced from Europe; it is known only indoors in North America. It is a pest of dried fruits, nuts, and cereals.

874 ***Ephestia kuehniella*** – This cosmopolitan species occurs naturally in the wild in Europe and the southern United States and occurs only indoors elsewhere in North America. It is a pest of dried fruits, nuts, and cereals.

875 ***Ephestia columbiella*** – This species is known from boreal forest habitat in SK; it probably occurs in AB. Unconfirmed AB specimens are in the NFRC.

875.1 ***Cadra cautella*** – Reported as a cosmopolitan indoor pest by Heinrich (1956), but no specific AB records are known. It is a pest of dried fruits and vegetables and will probably to be found in AB.

876 ***Bandera binotella*** – Known in AB only from Onefour, collected by D. F. Hardwick in 1951.

877 ***Bandera virginella*** – Known in AB only from Medicine Hat, collected by K. Bowman in 1945, and from a specimen collected by GGA at Suffield in 2008.

878 ***Bandera cupidinella*** – This species has been reported in the literature only from southwestern United States, but a single specimen from Onefour in the CNC, collected by D. F. Hardwick in 1964, was dissected and confirmed by J. Shaffer.

881 ***Pima fulvirugella*** – Includes *vividella* (McDunnough), a recently designated synonym (Neunzig 2003).

882 ***Pima albocostalialis*** – Known in AB from Lethbridge and Onefour.

883 ***Interjectio columbiella*** – Known in AB only from Lethbridge.

888 ***Ortholepis pasadamia*** – Known in AB only from Whitecourt, collected as larvae on birch by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service in 1951.

889 ***Polopeustis arctiella*** – Known in AB only from Nordegg, collected by K. Bowman in 1926.

890.1 ***Meroptera abditiva*** – This species is known from BC and SK; it probably occurs in AB as well. Specimens may be found among museum specimens of the externally identical *M. pravella* (Grote).

892 ***Sciota levigatella*** – Until recently (Neunzig 2003), this species was considered to be a synonym of *S. termitalis* (Hulst).

894 ***Sciota rubescentella*** – Known in AB only from Onefour and an unconfirmed specimen from the Pinhorn Provincial Grazing Reserve (collected by D. A. Macaulay).

895 ***Tulsa umbripennis*** – Known in AB from Waterton Lakes National Park, and from Whistler Mountain in Jasper National Park.

896 ***Telethusia ovalis*** – Includes *rhypodella* (Hulst), a recently designated synonym (Neunzig 2003).

897 ***Pyla fasciolalis*** – Known in AB only from Crowsnest Pass.

899 ***Pyla aequivoca*** – Includes *gaspeensis* McDunnough, a recently designated synonym (Neunzig 2003). It is known in AB from Banff (type locality) and Nordegg.

902 ***Pyla criddlella*** – This species was reported only from southern Canada by Wilterding and Balogh (2002), but it has recently been collected from AB, from the Slave River area in the extreme northeastern part of the province in 2001 by D. A. Macaulay, A. D. Roe, and GRP.

904 ***Pyla hanhamella*** – Known in AB from Hillcrest and Waterton.

905 ***Pyla aeneoviridella*** – Bowman's (1951) record of *P. scintillans* (Grote) is referable to this species.

906 ***Dioryctria abietivorella*** – A pest that feeds on needles and cones of spruce, fir, and Douglas-fir.

907 ***Dioryctria reniculelloides*** – A pest that feeds on cones, twigs, and buds of spruce and occasionally other conifers.

907.1 ***Dioryctria pseudotsugella*** – A pest that feeds on needles and cones of Douglas-fir. It is known from BC and MT and probably occurs in southwestern AB as well.

911.1 ***Philodema rhoiella*** – This species is known from mountainous regions of AK and MT; it probably occurs in AB as well.

913 ***Sarata edwardsialis*** – Known in AB only from Medicine Hat.

914 ***Sarata punctella*** – Known in AB from Lloydminster and Calgary.

915 ***Lipographis fenestrella*** – Includes *leoninella* (Packard), a recently designated synonym (Neunzig 2003). It is known in AB only from Big Knife and Lowden Springs (near Stettler), collected by C. D. Bird.

916.1 ***Etiella zinckenella*** – This species is known from BC and SK; it probably occurs in AB as well.

919 ***Rostrolaetilia placidissima*** – Known in AB from a single male specimen collected at Onefour by GGA and J. Troubridge in 2005. The determination of this specimen is not certain because of the paucity of material on which the description of this and related species is based (two similar species are known only from females; all species in the genus are known otherwise only from southwestern United States).

920 ***Zophodia grossulariella*** – New name for *Z. convulutella* (Hübner) since the publication of Munroe (1983).

922 ***Melitara subumbrella*** – Reported from AB by Bowman (1951) under the name *Olycella [= Melitara] nephelepasa* Dyar. At the time, *M. subumbrella* was considered to

be a synonym of *M. nephelepasa*, which is now a valid species found only in Mexico. Later taxonomic works by Heinrich (1956) and Neunzig (1997) omitted Bowman's AB record; see Simonsen et al. (2009) for details.

924 ***Homoeosoma stypticellum*** – Also treated by Bowman (1951) under the name *uncanale* Hulst, a synonym.

928 ***Phycitodes mucidella*** – Also treated by Bowman (1951) in error as *Homoeosoma [= Phycitodes] reliquellum* Dyar; the latter is restricted to eastern North America. Heinrich (1956) considered *P. reliquellum* to be a subspecies of *P. mucidella*. Munroe (1983) considered both *P. mucidella* and *P. reliquellum* to be subspecies of the Palaearctic *P. albatella* (Ragonot), but Neunzig (1997) reinstated both *P. mucidella* and *P. reliquellum* as species distinct from *P. albatella*.

932 ***Coenochroa illibella*** – Known in AB from Medicine Hat and Scandia, collected by E. E. Sterns in 1956, and from Suffield, collected by GGA in 2008.

934 ***Gesneria centuriella*** – Munroe (1972a) recognized several subspecies on the basis of slight geographical variation; most AB specimens are consistent with the subspecies *caecalis* (Walker), but northern ones may be closer to subspecies *beringiella* Munroe, and southern ones may be subspecies *ninguidalis* (Hulst).

935 ***Scoparia biplagialis*** – Munroe (1972a) recognized several subspecies on the basis of slight geographical variation with considerable intergradation; the nominate subspecies would apply to AB specimens.

936 ***Scoparia basalis*** – At least some AB records (those reported by Bowman 1951 that are in the UASM) probably refer to *S. biplagialis* Walker.

939 ***Eudonia lugubralis*** – Also treated by Bowman (1951) under the name *phycitinalis* Dyar, a synonym. Munroe (1972a) recognized two subspecies; AB specimens are members of the nominate subspecies.

940 ***Pseudoschoenobius opalescalis*** – Known in AB only from Onefour and the Pakowki dunes.

942 ***Euchromius californicalis*** – Reported by Bowman (1951) as *Ommatopteryx* [= *Euchromius*] *texana* Robinson, the only North American species recognized in the genus at that time, with both *E. ocelleus* (Haworth) and *E. californicalis* then considered to be synonyms (McDunnough 1939b). Now *E. ocelleus* and *E. californicalis* are both recognized as distinct species, with *texana* a synonym of the former. All AB specimens are referable to *E. californicalis*. *Euchromius ocelleus* is not known north of the contiguous United States (Capps 1966).

943 ***Platytes vobisne*** – Known in AB only from Dry Island Buffalo Jump Provincial Park, collected by C. D. Bird in 2002.

945 ***Catoptria maculalis*** – Known in AB only from near Zama City, collected by GRP in 1997, and the Birch Mountains, collected by D. A. Macaulay in 2004.

948 ***Chrysoteuchia topiarius*** – Larvae are general root feeders and occasional pests of turfgrass and conifer seedlings. Bowman's (1951) record of *Toripalpus breviornatalis* (Grote) (Pyralidae) appears to be based on an old misidentified specimen of *C. topiarius* found in the synoptic collection of the UASM under this name by GRP.

950 ***Crambus hamella*** – AB specimens are probably members of subspecies *carpenterellus* Packard.

951 ***Crambus alienellus*** – AB specimens are probably members of subspecies *labradoriensis* Christoph.

955 ***Crambus whitmerellus*** – Subspecies *browni* Klots ranges across AB south to Glacier National Park, MT; it is replaced to the south by the nominate subspecies (Klots 1942).

958 ***Crambus cockleellus*** – Known in AB only from Moraine Lake.

964 ***Raphiptera argillaceellus*** – The status of subspecies *minimellus* (Robinson) is uncertain; it may apply to all boreal populations.

965 ***Agriphila biarmicus*** – Known in AB only from Nordegg and Winfield. Populations in the Rocky Mountains are members of subspecies *paganellus* (McDunnough) (type locality: Nordegg); the subspecific status of boreal specimens is not known.

966 ***Agriphila plumbifimbriellus*** – Reported from across AB by Bowman (1951), but recent examination of many specimens by C. D. Bird indicates that *A. plumbifimbriellus* appears to be found in AB only in the southern Rocky Mountains, and material from other regions is probably referable to *A. ruricolellus* (Zeller) (C. D. Bird, personal communication). Specimens in the OLDS and the UASM collections require reexamination.

967 ***Agriphila ruricolellus*** – See note 966 on *A. plumbifimbriellus*.

968 ***Agriphila vulgivagellus*** – Larvae are pests of turfgrass, on which they feed from silken tubes they construct in the thatch.

969 ***Agriphila attenuatus*** – Discovered recently in AB by C. D. Bird; known from several locations across the grasslands.

973 ***Neodactria murellus*** – Known in AB only from Banff, where it was collected by C. B. D. Garrett in 1922.

974 ***Pediasia aridella*** – All North American populations appear to be members of subspecies *edmontellus* (McDunnough) (type locality: Edmonton, AB).

981 ***Loxocrambus awemensis*** – Known in AB from Medicine Hat and Onefour.

985 ***Donacaula melinellus*** – Some AB material has been identified in collections as *D. aquilellus* (Clemens), but the status of the latter as a separate species is uncertain. A revision of the group is currently underway by E. Martinez-Calez.

986 ***Donacaula longirostrallus*** – The true identity of AB material traditionally treated under this name is not known. Bowman (1951) reported AB material under the Old World name *Schoenobius forficellus* Thunberg, which is referable in North America to *D. longirostrallus*, according to Munroe (1983). However, material in the CNC, including material from Lloydminster, has been tentatively redetermined by E. Martinez-Calez as *D. amblyptepennis* (Dyar). Further work is being done to determine whether *longirostrallus* and *amblyptepennis* are separate species and to determine which name would apply to AB material (E. Martinez-Calez, personal communication). The species name was misspelled in Munroe (1983) and elsewhere as "*longirostrellus*."

987 ***Acentria ephemerella*** – New name for *A. nivea* (Olivier) since the publication of Munroe (1983). This species was introduced from Europe to Montréal in 1927; it spread westward and reached central AB by the late 1990s. It was first reported in AB at Olds, collected by E. Mengersen in 1995.

988 ***Elophila icciusalis*** – Placed until recently in the genus *Munroessa*, synonymized with *Elophila* by Goater et al. (2005). Munroe (1972a) recognized three subspecies on the basis of slight geographical variation; the nominate subspecies would apply to AB specimens.

989 ***Elophila obliteralis*** – Placed until recently in the genus *Synclita*, synonymized with *Elophila* by Goater et al. (2005).

993 ***Petrophila confusalis*** – Known in AB from two recently collected specimens, one collected in Lethbridge by J. R. Byers on 1 August 2005 and the other collected in Medicine Hat by J. A. Scott on 2 July 2008.

994 ***Mimoschinia rufofascialis*** – Munroe (1972b) recognized four subspecies based on slight geographical variation that intergraded somewhat; subspecies *novalis* (Grote), if it is considered a valid taxon, would apply to AB specimens.

995 ***Evergestis pallidata*** – It is uncertain if this species was introduced from Europe or if it is naturally Holarctic (Munroe 1973a).

997 ***Evergestis vinctalis*** – Known in AB only from Lethbridge, collected by K. Bowman in 1949. Munroe (1973a) recognized two subspecies of dubious status on the basis of slight geographical variation in maculation; it is not known which would apply to AB specimens.

998 ***Evergestis obscuralis*** – Populations in the Rocky Mountains are members of the nominate subspecies; subspecies *palousalis* Munroe is restricted to the western Great Basin in the United States (Munroe 1973a).

999 ***Evergestis funalis*** – This species is very similar to *E. subterminalis* Barnes and McDunnough, and the females are not separable with certainty. It is known in AB on the basis of a single female specimen in the UASM, collected at Banff by K. Bowman in 1935; determination is uncertain. This species is otherwise known from across BC as far east as Radium, so the species probably occurs in AB even if the Banff record proves not to be *E. funalis*. Munroe (1973a) recognized five subspecies; if the identity of the Banff specimen is correct, it would probably be subspecies *columbialis* Munroe, known from adjacent BC.

1001 ***Prorasea simalis*** – Known in AB only from Hillcrest, collected by K. Bowman in 1922.

1005 ***Orenaia alticolalis*** – This species is known with certainty in AB only from Plateau Mountain, collected on 5 July 2002 by GRP and D. W. Langor. Two old Banff specimens were determined by Munroe (1973a) to be transitional between *O. alticolalis* and *O. pallidivittalis* Munroe. However, the CNC has them labeled as the former so that is the name we apply here.

1007 ***Saucrobotys futilalis*** – Munroe (1976a) recognized an eastern and a western subspecies with slight maculation differences; subspecies *inconcinnalis* (Lederer) occurs in AB.

1010 ***Ostrinia nubilalis*** – A stem-boring pest of corn (*Zea mays* L.; Gramineae) and other thick-stemmed plants.

1013 ***Anania coronata*** – All North American populations are members of subspecies *tertialis* (Guenée). Until recently, this species was placed in *Phlyctaenia*, which was synonymized with *Anania* by Tränkner et al. (2009).

1014 ***Anania extricalis*** – Munroe (1976a) recognized a northern and a southern subspecies; subspecies *dionalis* (Walker) applies to all western Canadian populations. Until recently, this species was placed in *Nealgedonia*, which was synonymized with *Anania* by Tränkner et al. (2009).

1015 ***Anania mysippusalis*** – Until recently, this species was placed in *Algedonia*, which was synonymized with *Anania* by Tränkner et al. (2009).

1016 ***Anania funebris*** – All North American populations of this Holarctic species are members of subspecies *glomeralis* (Walker).

1017 ***Achyra bifidalis*** – In AB this species is a stray from the United States to the south. A voucher in the UASM is from the Lost River valley, AB, collected by GGA and J. Troubridge.

1021 ***Loxostege sticticalis*** – The larva is polyphagous and is sometimes a garden pest.

1022 ***Loxostege anartalis*** – Munroe (1976a) recognized five subspecies. He reluctantly assigned western Canadian specimens to the subspecies *albertalis* Barnes and McDunnough (type locality: Gleichen, AB) but was uncertain about their distinctiveness from eastern material of subspecies *lulualis* (Hulst).

1023 ***Loxostege ephippialis*** – Known in AB only from Nordegg, collected by K. Bowman in 1920.

1024 ***Loxostege commixtalis*** – Bowman (1951) reported this species from AB, but his vouchers from the Rocky Mountains of AB have been redetermined as *L. cereralis* (Zeller). *Loxostege commixtalis* is restricted to bog habitats of the boreal forest. Bowman's error was due to a previous taxonomic arrangement; at the time (1951), *L. cereralis* was considered to be a synonym of *L. commixtalis* (McDunnough 1939b).

1025 ***Loxostege cereralis*** – The larva is polyphagous and is sometimes a garden pest.

1031 ***Pyrausta subsequalis*** – All western Canadian populations are subspecies *plagalis* Haimbach.

1032 ***Pyrausta borealis*** – This species was historically treated as a subspecies of *P. subsequalis* (Guenée), but was reinstated as a full species since Munroe (1983). Munroe (1976b) considered it to be merely a variety of *P. subsequalis*.

1033 ***Pyrausta scurralis*** – This species was reported from MB and SK by Munroe (1976b); it was discovered in AB in recent years by C. D. Bird, who has collected it on several occasions at Buffalo Lake. All AB specimens are referable to subspecies *awemealis* Munroe.

1034 ***Pyrausta unifascialis*** – Munroe (1976b) recognized four subspecies; he noted that the two reported from AB (*subolivalis* (Packard) and the nominate subspecies) were known to intergrade in AB, so their validity as subspecies is doubtful.

1035 ***Pyrausta fodinalis*** – All Canadian populations are members of subspecies *septentrionicola* Munroe (type locality: Scandia, AB).

1036 ***Pyrausta socialis*** – All Canadian populations are members of the nominate subspecies.

1037 ***Diastictis ventralis*** – Known in AB from Lethbridge and Redwater. All western Canadian populations are members of the subspecies *seamansi* Munroe (type locality: Lethbridge; named after Lethbridge entomologist H. L. Seamans). Bowman's (1951) record of *D. argyralis* Hübner is based on specimens referable to *D. ventralis*, then thought to be a subspecies of *D. argyralis* (McDunnough 1939b).

1038 ***Herpetogramma pertextalis*** – This species has been reported from across Canada by many workers, but diagnostic characters for the separation of it from *H. abdominalis* (Zeller) and *H. thestealis* (Walker) (both known in eastern Canada) have long been uncertain. More recently, barcode data indicate that there are no clear genetic differences between the taxa and all are probably conspecific (J.-F. Landry, personal communication). *Herpetogramma thestealis* is the oldest name, but we retain the entry under *H. pertextalis* herein, pending resolution of the matter.

1040 ***Choristostigma disputalis*** – Known in AB only from Nordegg.

1041.1 ***Udea washingtonalis*** – Known from Glacier National Park, MT, and the BC interior; this species probably occurs in adjacent AB. Munroe (1966) recognized four subspecies of dubious validity, on the basis of slight geographical variation in maculation. If it is valid, subspecies *hollandi* Munroe would be applicable to populations in areas adjacent to AB.

1043 ***Udea nordeggensis*** – Known in AB from Banff and Nordegg (type locality).

1044 ***Udea indistinctalis*** – Munroe (1966) reported this species from CA and WA; he also assigned a female specimen from Waskesiu, SK, to the species, with some doubt. The species was reported in AB by Bowman (1951) but no specimens can be located, so the presence of the species in AB is considered to be uncertain. Subspecies *johnstoni* Munroe would apply to all populations outside of CA.

1045 ***Udea itysalis*** – Considerable geographical variation exists in this species. Munroe (1966) recognized 10 subspecies, all characterized on the basis of geographical differences in maculation. The nominate subspecies and possibly subspecies *tillialis* (Dyar) occur in AB.

1046 ***Udea abstrusa*** – Munroe (1966) recognized three subspecies and reported the nominate one from AB. However, northern populations would probably be subspecies *subarctica* Munroe (type locality: Fort Smith, NT).

1049 ***Desmia maculalis*** – Known in AB only from an unverified specimen in the CNC from Calgary, collected by F. H. Wolley Dod in 1914.

1050 ***Loxostegopsis polle*** – Known in AB from a single specimen collected by D. A. Macaulay at the Pinhorn Provincial Grazing Reserve in 2006. This species is not otherwise known north of WY.

1051 ***Diacme adipaloides*** – Misidentified by Bowman (1951) as *D. elealis* (Walker), which is not known to occur in Canada.

1052 ***Mecyna submedialis*** – Three specimens from the Drumheller area were identifed in the CNC as *M. fuscimaculalis* (Grote), but these are indistinguishable from *M. submedialis* from the same area and are assumed to have been misidentified. As far as we are aware, the *M. fuscimaculalis* record is unpublished, so we have not included it in the Excluded Species section.

1054 ***Nomophila nearctica*** – Referred to in older works (including Bowman 1951) as *N. noctuella* ([Denis and Schiffermüller]), a related Palearctic species.

1055 ***Thyris maculata*** – This species is known in AB only from Medicine Hat; it was photographed and collected by J. H. Acorn in 2003. It is also known from just across the BC border at Robson (specimen in the CNC) and could be encountered in the mountains of AB as well.

1056 ***Epargyreus clarus*** – AB populations have in the past been treated as the nominate subspecies but there are no published reasons to support this approach. AB specimens do not agree in appearance with specimens of nominate *E. clarus* from the southeastern United States and thus no subspecific name is assigned herein.

1057 ***Thorybes pylades*** – No subspecific name is assigned herein pending a taxonomic review of AB populations.

1058 ***Pholisora catullus*** – Discovered in AB south of Manyberries in 2004 by K. Roever. The AB record in Layberry et al. (1998) is the result of a database entry error (C. Guppy, personal communication).

1059 ***Erynnis icelus*** – Although no subspecies have been recognized in recent books and lists, there is apparent geographic variation in the appearance of this species that probably warrants erection of subspecific taxa.

1059.1 ***Erynnis pacuvius*** – This species is known from southeastern BC as far east as Cranbrook and also from northern MT; it may be found in the extreme southwest of AB where localized stands of its host, Snow Brush (*Ceanothus velutinus* Douglas; Rhamnaceae), occur.

1060 ***Erynnis afranius*** – The name *E. afranius* is used as a name of convenience to refer to AB populations that are two brooded and are not *E. persius* (Scudder). There is a need

for further research on the taxonomy of the nominal species *afranius*. Current taxonomy of the group is largely based on genitalic characters and may not reflect a taxonomic alignment based on the biological species concept; see discussion in Burns (1964).

1061 ***Erynnis persius*** – The species concept of *E. persius* expressed by Bird et al. (1995) is retained in this list as a matter of convenience: it appears that no taxonomic research has been published on this species complex since Burns (1964) simply listed the names pertinent to this complex. Existing information suggests that it would be more reasonable to have the species name *persius* apply only to the disjunct eastern North American populations and to use the species name *borealis* (Cary) for western populations, pending a biological and taxonomic review. Recognition of different subspecies status for prairie, boreal, and cordilleran populations is maintained for now, although further review is warranted. See also Freeman (1943) and McDunnough (1932).

1062 ***Pyrgus centaureae*** – The subspecific names *freija* (Warren) and *loki* Evans as used in Bird et al. (1995) are retained in this list for AB populations pending further research. The nominal species *centaureae* as portrayed in most recent North American literature is fraught with taxonomic uncertainty. The published record suggests that our named North American entities are not conspecific with Eurasian *centaureae* and probably represent more than one species (Warren 1935; Evans 1953). Shapiro (1974), Schweitzer (1989), and Gochfield and Burger (1997) recognized *P. wyandot* (Edwards) as a distinct species. It may be that *loki* is also a full species. The taxon *freija* (which was originally described as a species) has traditionally been applied to populations across the northern part of the continent, but review of specimens by NGK revealed that specimens of *freija* from Labrador look different from specimens from western North America to which the name *freija* is commonly applied.

1063 ***Pyrgus ruralis*** – No subspecific name is applied to AB populations because nothing has been published to establish the validity of any subspecific name with respect to these populations.

1064 ***Pyrgus scriptura*** – This species is known in AB from a single specimen, collected at Manyberries by D. F. Hardwick in 1951. No subspecific name is assigned, pending availability of sufficient specimens to support an informed interpretation.

1065 ***Pyrgus communis*** – The nominate subspecific name is not applied to AB populations because they do not look like the nominate subspecies. Bowman (1951) used the name *P. communis albescens* Plötz for populations in AB, but *P. albescens* is now considered to be a valid species, which does not occur in Canada.

1066 ***Carterocephalus mandan*** – We treat this prairie–parkland taxon as specifically distinct, as discussed in entry A1 in the Appendix. The specimen illustrated in Bird et al. (1995) as *mandan* is not this species; see note 1067 on *C. palaemon*.

1067 ***Carterocephalus palaemon* ssp. *mackenziei*** – We apply this name to specimens from the boreal forest of northern AB; see the entry A1 regarding *C. mandan* (Edwards) in the Appendix. It seems unlikely that these populations are conspecific with *C. palaemon* but this arrangement is used pending further research. Pelham (2008) considered *mackenziei* to be a synonym of *C. palaemon skada* (Edwards). AB mountain populations (including the specimen figured in Bird et al. (1995) and labeled as *C. palaemon mandan*) are distinct from boreal populations, as mentioned by Kondla (1986a), but there is apparently no suitable subspecific name available so they are grouped herein. The presence of subspecies *magnus* Tilden and Emmel is not recognized herein for the reasons given by Mattoon and Tilden (1998) and by Warren (2005) and because of

the presence of additional phenotypes in western Canada, within the range assigned to *magnus* by Guppy and Shepard (2001).

1068 ***Megathymus streckeri*** – This species has only recently been discovered in AB, by K. Roever in 2002. It was collected near Onefour, in one of the two known AB sites with naturally occurring yucca (*Yucca glauca* Nutt. ex Fraser; Agavaceae), its host plant.

1069 ***Ancyloxypha numitor*** – This species is known in AB from only one old specimen (collected at Lethbridge on 3 July 1909 by J. B. Wallis) which may have been introduced. The species is otherwise known from eastern Canada, as far west as eastern SK.

1071 ***Thymelicus lineola*** – This species was introduced to Canada from Europe in 1910 and spread westward in the 1950s and 1960s (Bird et al. 1995). Originally known in AB only in the Edmonton area, it has expanded its range in recent years and was found across most of the aspen parkland by 2007. Layberry et al. (1998) assigned all North American populations to the nominate subspecies, but it is unknown if all North American populations are in fact derived from one source so no subspecific name is used herein.

1074 ***Hesperia uncas*** – No subspecific name is used herein, pending a taxonomic review.

1075 ***Hesperia manitoba*** – We treat *H. manitoba* as a species separate from the Eurasian *H. comma* (Linnaeus), as discussed in entry A2 in the Appendix.

1076 ***Hesperia assiniboia*** – This taxon has often been treated as a subspecies of *H. comma* (Linnaeus), but more recently the weight of evidence has favored recognition of it as a distinct species (Layberry et al. 1998) as suggested by Bird et al. (1995). True *H. comma* appears to be restricted to Beringia (Forister et al. 2004). Populations in the Peace River area differ from more southern populations but remain undescribed at the subspecific level. Further work is needed to clarify the taxonomic relationship between the taxa *assiniboia* and *colorado* (Scudder).

1076.1 ***Hesperia colorado* ssp. *harpalus*** – This taxon was reported near AB from the extreme southeast of BC and the extreme southwest of SK by Layberry et al. (1998); it could be found in arid habitats in and around Waterton Lakes National Park or in southeastern AB. See note 1076 on *H. assiniboia*.

1076.2 ***Hesperia leonardus* ssp. *pawnee*** – Reported from MT, immediately south of the Onefour area (Opler et al. 2006), and from the extreme south of SK, as far west as St. Victor. This species could be found in shortgrass prairie in the extreme southeast of AB. The taxon *pawnee* was long considered to be a full species and is still considered as such by many workers, including NGK.

1076.3 ***Hesperia pahaska*** – Reported from MT, immediately south of the Onefour area (Opler et al. (2006), and known from southern SK as far west as Grasslands National Park. This species could be found in shortgrass prairie in the extreme southeast of AB. This species has been reported from AB by MacNeill (1964) on the basis of a museum specimen from Banff. We have not been able to confirm the identification of that specimen and assume that it is incorrect as no suitable habitat exists in that area.

1077 ***Hesperia nevada*** – No subspecific name is applied pending a taxonomic review. The female specimen illustrated in Bird et al. (1995) is actually a female *H. colorado* (Scudder) from WY.

1081 ***Polites themistocles*** – No subspecific name is used herein pending review of AB populations.

1082 ***Polites mystic* ssp. *dacotah*** – AB populations are probably referable to the subspecies *dacotah*. Their appearance is certainly not consistent with that of the nominate subspecies as listed in Bird et al. (1995).

1083 ***Poanes hobomok*** – No subspecific name is applied herein. Review is needed to determine if AB populations are consistent with the nominate subspecies or the subspecies *ridingsii* Chermock and Chermock. This species has extended its range westward in recent years. When Bird et al. (1995) was published, the species was known in AB only from Elk Point and Cold Lake; since 2000 it has become relatively common in the Edmonton area (collected there by GRP). The female *P. hobomok* specimen illustrated in Bird et al. (1995) is actually a specimen of *Polites peckius* (Kirby).

1084 ***Ochlodes sylvanoides*** – Populations along the Milk River appear to be consistent with the subspecies *napa* (Edwards); the mountain populations appear to be different. However, a rigorous review of AB material is needed before one can say anything more definitive, so no subspecific names are applied herein. This species has expanded its range northward in recent years. At the time Bird et al. (1995) was published, it was known only from the Waterton–Crowsnest and Onefour areas; in 1996 it was collected at Vulcan (specimens in the UASM) and has subsequently been discovered north to the Drumheller area.

1085 ***Anatrytone logan*** – AB specimens examined to date do not agree with named subspecies so no subspecific name is used herein.

1085.1 ***Notamblyscirtes simius*** – Known from the extreme south of SK, as far west as Grasslands National Park. This species could be found in shortgrass prairie in the extreme southeast of AB. It was treated by Bird et al. (1995) and Layberry et al. (1998) in *Amblyscirtes*. Genus treatment here follows that of Scott et al. (2006).

1086 ***Euphyes vestris*** – This species is known in AB from only one specimen, collected by C. D. Bird near Erskine, on 20 July 1999. The subspecies affiliation of the specimen is unclear.

1087 ***Parnassius clodius*** – Assigned to subspecies *alturus* Dyar by Layberry et al. (1998) and Guppy and Shepard (2001) on the basis of only two known specimens and without supporting information. Ferris (1976b) limited application of the name *alturus* to two counties in southern ID and ascribed populations to the immediate south of AB to subspecies *gallatinus* Stichel. Therefore, no subspecific name is used here. The subspecific name *alturus* is frequently misspelled as *altaurus*; the spelling *alturus* is used here in accordance with Article 32.5 of the International Code of Zoological Nomenclature (ICZN 1999).

1088a ***Parnassius smintheus* ssp. *smintheus*** – The nominate subspecies (type locality: Rock Lake, AB; Shepard 1984) is recognized herein for the populations in the northern Rocky Mountains.

1088b ***Parnassius smintheus* ssp. *xanthus*** – AB populations from south of the Bow River are different in size and appearance from nominate *smintheus* and are treated herein as subspecies *xanthus*. Ferris (1976a) treated populations from the extreme south of AB as subspecies *montanula* Bryk and Eisner, but more recent research by S. Kohler suggests that *xanthus* is a more appropriate subspecific name for these populations. Guppy and Shepard (2001) considered AB populations to belong to the nominate subspecies. They interpreted the taxa *montanula* and *xanthus* as being junior subjective synonyms of *magnus* Wright, as did Pelham (2008). Given that no rigorous taxonomic review of the *P. smintheus* populations in AB has been published, nothing further can be said at

this time about the taxonomic validity (or lack thereof) of the names *nanus* Neumoegen and *manitobaensis* Bryk and Eisner. See also Eisner (1957, 1977).

1089a ***Papilio machaon* ssp. *hudsonianus*** – There is no consensus with respect to species boundaries in the "*machaon*" complex. Sperling (1987, 1993b) argued that the AB taxa *dodi* McDunnough, *pikei* Sperling, and *hudsonianus* Clark should be treated as subspecies of the European species *P. machaon*. In contrast, Eitschberger (1993) did not recognize *P. machaon* as being present at all in North America and treated *hudsonianus* and *pikei* as subspecies of *P. aliaska* Scudder. Holland (1931) also treated *P. aliaska* as a separate species. Guppy and Shepard (2001) treated the taxa *dodi*, *oregonius* Edwards, and *pikei* as subspecies of *P. bairdii* Edwards. Thompson (1998), Pyle (2002), Herbeek and Novembre (2003), and Murphy (2004) treated the taxon *oregonius* as a full species. Miller and Brown (1981) considered the taxon *dodi* to be a subspecies of *P. oregonius*. Consequently the taxonomy used by Bird et al. (1995) and Pelham (2008) is used herein as an arbitrary default pending further clarification of the most plausible taxonomic interpretation of this complex.

1089b ***Papilio machaon* ssp. *pikei*** – This subspecific name is applied to populations of *P. machaon* in the Peace River parkland. See the discussion of *P. machaon* in note 1089a on *P. machaon hudsonianus* Clark. The type locality of *pikei* is Dunvegan, AB.

1089c ***Papilio machaon* ssp. *dodi*** – See the discussion of *P. machaon* in note 1089a on *P. machaon hudsonianus* Clark. The type locality of *dodi* is Dorothy, AB (Bird and Harper 1980; Kondla 1981b).

1090 ***Papilio zelicaon*** – No subspecies are recognized in North America, as per Sperling (1987), although there is variability in AB populations (Fisher 1977; Forister and Shapiro 2003; Remington 1968; Sperling and Harrison 1994; Wehling 1994). A dark form, "*nitra*" Edwards (treated by some as a subspecies), constitutes up to 10% of some populations in the southern AB grassland and parkland region, but it occurs at decreasing frequency northward and westward (Sperling 1987). Populations in the north and extreme southwest of AB appear to have affinities with BC populations, but intergradation with great plains forms precludes the application of subspecific names to these populations as well (F. A. H. Sperling, personal communication).

1091 ***Papilio canadensis*** – The form "*arcticus*", described by Skinner (1906), was applied as a subspecies to western (including AB) populations by Holland (1931), Ferris et al. (1983), and Ferris (1989). However, it is not recognized herein, following Bird et al. (1995) and Layberry et al. (1998). The type locality of *arcticus* includes the Athabasca River, most likely between Fort McMurray and the Peace–Athabasca delta (Kondla 1996). There has been much discussion in the literature with respect to genus boundaries in the Papilionini. The genus *Pterourus* has been erected for *P. canadensis* and other members of the tiger swallowtail group by some workers. A broad concept of *Papilio* is used here, as advocated by Miller (1987), Layberry et al. (1998), and Opler and Warren (2003), with *Pterourus* considered to be a subgenus.

1092 ***Papilio rutulus*** – This species has only recently been confirmed to be present in AB, in the extreme southwest of the province, on the basis of specimens collected by E. M. Pike and photographs taken by R. Klauke. No subspecific name is used herein pending a critical comparison of western Canadian populations with the nominate subspecies.

1095 ***Colias philodice*** – The taxonomic relationships between various taxa currently thought to be subspecies of *C. philodice* need to be researched. Bird et al. (1995) made no mention of subspecies within *C. philodice*. Layberry et al. (1998) treated all AB

populations as the nominate subspecies. Guppy and Shepard (2001) reported all AB populations as subspecies *eriphyle* Edwards; Layberry et al. (1998) considered *eriphyle* to be restricted in Canada to southern BC. Pelham (2008) considered *hagenii* Edwards to be a synonym of *eriphyle*. The arrangement used here is tentative and based only on superficial appearance of adults and approximate correlation with major ecosystems in the province. There is no published research that supports a differing interpretation. Wheat and Watt (2008) suggested that analysis of the phylogenetic relationships among North American species showed some unexpected results, although they relied entirely on mitochondrial DNA sequencing for their phylogenetic analysis, with limited sampling of different geographical regions and taxa. The taxonomy of North American *C. philodice* needs to be revised; an integrated approach will be necessary to clarify the taxonomy of this difficult genus, combining analyses of mitochondrial and nuclear markers with analyses of ecological and phenotypic traits.

1097a ***Colias christina* ssp. *christina*** – Although the nominate subspecies was described from northeastern AB (type locality: vicinity of Mountain Rapids, Slave River, AB; Kondla 1995b), there is significant geographical variation (Kondla 1993, 1995a). The name *astraea* Edwards, which has sometimes been used for AB populations, does not apply to any Canadian population and is associated with *Colias edwardsii* Edwards (Scott et al. 2006). The taxon *alberta* Bowman (type locality: Wembley, AB), treated by some as a subspecies of *C. eurytheme* Boisduval, is herein considered to be a junior subjective synonym of *C. christina* (Hovanitz 1943; Masters 1971; Kondla 1986b).

1097b ***Colias christina* ssp. *sacajawea*** – The features of populations in the extreme south of AB are consistent with the features of this taxon.

1098 ***Colias alexandra* ssp. *altamont*** – Contrary to information on page 45 of Bird et al. (1995) and in other literature, AB populations are not the nominate subspecies (Kondla 1981a, 1993, 1995a; Bird et al. 1995, page 134) and were recently described as a new subspecies in Scott et al. (2006).

1099 ***Colias elis*** – We treat the taxon *elis* as a species distinct from *C. meadii* Edwards (see entry A3 in the Appendix). The type locality of *elis* is reported to be Kicking Horse Pass, Banff National Park, by Kondla (1996) and is reported to be Kicking Horse Pass railway station, Yoho National Park, BC, by Guppy and Shepard (2001). A syntype in the Field Museum of Natural History, Chicago, IL, displays the province name Alberta on one of the data labels. This difference in the reported type localities is of no practical significance.

1100 ***Colias canadensis*** – Southern populations were treated until recently as a subspecies of *C. hecla* Lefebvre but were recognized as a distinct species by Ferris (1988). True *C. hecla* is a species of the high arctic that does not occur in AB. Bowman (1951) reported this species as *C. hecla pallida* Skinner and *C. hecla glacialis* McLachlan.

1101 ***Colias nastes* ssp. *streckeri*** – The taxon *dioni* Verhulst (type locality: Plateau Mountain, AB) is herein viewed as part of the individual variability of the *streckeri* population on Plateau Mountain and thus treated as a junior subjective synonym of *streckeri*. The type locality of *streckeri* is the vicinity of Lake Louise, AB (Kondla 1996).

1102 ***Colias gigantea* ssp. *mayi*** – This taxon was erroneously listed as the nominate subspecies in Bird et al. (1995); boreal and most mountain populations are subspecies *mayi*. The subspecific name *harroweri* Klots, applied to southwestern AB populations by Bird et al. (1995), should not be applied to AB populations. Subspecies *harroweri* occurs only far to the south; intervening populations in MT will be described as a new subspecies. See also Ferris (1987).

1103 ***Colias pelidne* ssp. *minisni*** – Treated as *C. pelidne skinneri* Barnes by Bird et al. (1995), Layberry et al. (1998), and most other recent workers. The subspecies *skinneri* does not occur in AB. For a review see Ferris (1988), who noted that the populations in the eastern arctic and Rocky Mountains may be separate species. There has also been debate in the literature with respect to nomenclatural availability of the name *minisni*, owing to the very limited description provided by Bean (1895). Pelham (2008) considered the name *minisni* Bean to be a nomen nudum; however, he recognized the name *minisni* Barnes and McDunnough, 1916. (Like other recent workers, Pelham (2008) considered *minisni* to be a synonym of *skinneri.*) Recent review of the International Code of Zoological Nomenclature (ICZN 1999) and consultation with code experts reveals that the limited description provided by Bean does comply with the code definition of a description and this interpretation is used herein, in keeping with the stability intent of the code and following Grieshuber and Lamas (2007). The male specimen figured in Bird et al. (1995) is an atypical *C. philodice* Godart, and the female specimen is a *C. christina* Edwards. The type locality of *minisni* was reported to be Laggan, AB, by Miller and Brown (1981) but was reported as Kicking Horse Pass railway station, Yoho National Park, BC, by Guppy and Shepard (2001); however, this latter view is herein considered erroneous because Bean (1895) clearly stated that his name was based on "examples of a Laggan butterfly." Thus, the type locality of *minisni* is properly recognized as Laggan, AB, which is presently known as Lake Louise.

1104 ***Colias interior*** – No subspecific name is assigned herein, pending taxonomic review.

1105 ***Colias palaeno* ssp. *chippewa*** – This taxon was described as a full species and treated thus by Holland (1931), Tuzov (1997), Verhulst (2000), and Guppy and Shepard (2001). It was considered a subspecies of the European *C. palaeno* (Linnaeus) by Bird et al. (1995), Layberry et al. (1998), Greishuber and Worthy (2004), and Pelham (2008), a move we reluctantly follow herein, with the caution that further work is needed on this taxon. See also Kurentsov (1970), Maey (1986), and Gorbunov (2001) for further discussion.

1106 ***Zerene cesonia*** – A rare stray from the southern United States. This species was collected only once in AB, at Didsbury in 1942. The voucher is in the A. Rupp collection, the current location of which is unknown.

1107 ***Anthocharis stella*** – This taxon was considered by McDunnough (1928) to be a subspecies of *A. sara* Lucas, and it has been treated thus by most workers since, including Bird et al. (1995). It is herein listed as a separate species, consistent with Layberry et al. (1998), Opler (1999), and Guppy and Sheppard (2001), on the basis of the molecular results of Geiger and Shapiro (1986), who showed that *sara* and *stella* do not hybridize where they are sympatric in the Sierra Nevada. See also Stout (2005) for details on the distinction between *A. stella* and *A. sara.*

1108 ***Euchloe ausonides* ssp. *mayi*** – AB populations were considered to be the nominate subspecies by Opler (1968) and Layberry et al. (1998) but the nominate subspecies is morphologically and biologically a different insect and we do not recognize it as being present in AB, in accordance with Bird et al. (1995), Guppy and Shepard (2001), and Warren (2005). Bowman (1951) referred to all AB populations as subspecies *coloradensis* (Edwards), a view that is also considered to be erroneous.

1109 ***Euchloe olympia* ssp. *rosa*** – Although no subspecies were recognized by Layberry et al. (1998) or Pelham (2008), the AB populations appear to be distinct from nominate

*olympia* and are more properly aligned with the subspecies *rosa* (Edwards). See also Holland (1931) and Clench and Opler (1983).

1110 ***Euchloe creusa*** – Type locality: near Rock Lake, AB (Shepard 1984).

1111 ***Neophasia menapia* ssp. *tau*** – Listed as the nominate subspecies in Bird et al. (1995); the subspecific name *tau* is used herein in accordance with Guppy and Shepard (2001) and advice from S. Kohler.

1112a ***Pieris marginalis* ssp. *tremblayi*** – Known in AB only from the Rocky Mountains in the Grande Cache area. Older works grouped the species *P. marginalis* with *P. oleracea* Harris under the name *P. napi* (Linnaeus). *Pieris napi* is now considered to be restricted to the Old World, on the basis of work by multiple researchers, including Warren (1968), Bowden (1981), Eitschberger (1983), Geiger and Shapiro (1992), and Chew and Watt (2006).

1112b ***Pieris marginalis* ssp. *reicheli*** – The subspecific name *reicheli* is tentatively used here for populations in the southern mountains in the absence of a more appropriate name. However, this matter needs to be reviewed, as does the report of some specimens referable to the subspecies *ziegleri* Eitschberger (Eitschberger 1991). See Kondla (2005) for further commentary. See discussion of the species *P. marginalis* in note 1112a on *P. marginalis tremblayi*.

1113 ***Pieris oleracea* ssp. *oleracea*** – Older works (e.g., Bowman 1951) treated this species, along with *P. marginalis* (Scudder), under the Old World name *P. napi* (Linnaeus), based on a Holarctic concept of this last species. See note 1112a on *P. marginalis tremblayi*. The specimen illustrated in Bird et al. (1995) as a summer form of *P. oleracea* is actually a female of *P. marginalis* (Scudder).

1116b ***Pontia occidentalis* ssp. *nelsoni*** – Reported as present in AB by Bowman (1951) but no voucher specimens are known. It is known from the northern Rocky Mountains in BC, so it is not unreasonable to assume that it might have been collected in AB in the mountains north of Jasper. Genetic data in Chew and Watt (2006) suggest that *nelsoni* is better treated as a species (as it was originally described by Edwards) rather than a subspecies.

1117a ***Pontia sisymbrii* ssp. *flavitincta*** – The specimen illustrated in Bird et al. (1995) as a male *P. sisymbrii flavitincta* is actually a female *P. sisymbrii beringiensis* Guppy and Kondla.

1117b ***Pontia sisymbrii* ssp. *beringiensis*** – Northern boreal populations have recently been described as a subspecies distinct and widely disjunct from subspecies *flavitincta* (Comstock), as this taxon was treated in Bird et al. (1995).

1118 ***Lycaena phlaeas* ssp. *arethusa*** – The taxon *arethusa* was described as a full species and it appears that nothing other than general external and genitalic similarity supports its current status as a subspecies of the Eurasian *L. phlaeas*. It is doubtful that *L. phlaeas* is present in North America but the popular placement of *arethusa* as a subspecies of it is used here as a matter of taxonomic inertia pending further review. For a recent review of the *phlaeas* complex of taxa see Kohler (2007). Kondla (1996) concluded that the type locality of *arethusa* is the head of Fish Creek, AB. However this is an error resulting from the misunderstanding that a single name-bearing type exists. For example, Shields and Montgomery (1966) stated that a holotype exists in the USNM and this statement was repeated by Miller and Brown (1981). However, Wolley Dod did not designate a holotype in the original description (Dod 1907) and no lectotype has been subsequently designated, so the syntypes collectively constitute the name-bearing type and thus the type locality must be amended to the following: head of Fish Creek and south fork of Sheep River, AB. See also Ford (1923) and Ferris (1974). More than one

genus-level treatment has been advanced for North American coppers (e.g., Miller and Brown 1979) and recent work by Pratt and Wright (2002) showed there is merit in recognizing multiple genera within the concept of *Lycaena* as used herein. These "subgenera" (as commonly treated in recent literature) are not used herein because of some unresolved issues, including the pending description of another genus-level taxon.

1119 ***Lycaena cupreus* ssp. *snowi*** – The name *henryae* (Cadbury) was used for Canadian populations by Guppy and Shepard (2001), but most recent workers, including Pelham (2008), consider the taxon *henryae* to be a synonym of the taxon *snowi*.

1121 ***Lycaena editha*** – Reported to be present in Canada by Bowman (1951) on the basis of a single old record from High River, collected by T. Baird. For many years the voucher was lost, so Bird et al. (1995) treated the record as unsubstantiated and Layberry et al. (1998) excluded the species entirely from their list of Canadian butterflies. The voucher was rediscovered in the UASM collection by BCS in 2001 (Anweiler and Schmidt 2003). It is possible that this specimen represents the subspecies commonly referred to as *montana* Field. However, Koçak (1984) pointed out that the name *montana* Field, 1936 is a primary homonym of *Lycaena semiargus montana* Meyer-Dur, 1851 and provided the replacement name *vurali*.

1122 ***Lycaena rubidus* ssp. *sirius*** – Assignment to subspecies *sirius* follows Johnson and Balogh (1977) but it is noted that this assignment may not be appropriate and needs to be reviewed. Some researchers doubt the validity of some *L. rubidus* subspecies; in contrast, Holland (1931) considered *sirius* to be a distinct species from *L. rubidus*.

1123 ***Lycaena heteronea* ssp. *klotsi*** – AB populations were referred to the nominate subspecies in Bird et al. (1995), Layberry et al. (1998), and Guppy and Shepard (2001). However, the nominate taxon has been limited to a small area of coastal CA (Emmel and Pratt 1998). The nearest named taxon that is plausibly the same as AB populations is *klotsi* and this subspecific name is tentatively used herein.

1126 ***Lycaena castro* ssp. *florus*** – The taxon *castro* has been variously placed within *L. dorcas* and *L. helloides* by various authors over the years. It was treated as *L. dorcas florus* by Bird et al. (1995), Layberry et al. (1998), and Pelham (2008). It is treated herein as a distinct species, as it was described. This treatment is supported by differences in the appearance, voltinism, habitat, and distribution of the taxon *castro* compared with those of *L. dorcas* and *L. helloides*. See Kondla and Guppy (2002). Treatment of the taxon *florus* as a subspecies of *L. castro* follows Scott et al. (2006). However, it is possible that further research may show these two taxa are not conspecific after all. The type locality of *florus* is near Lundbreck, near the mouth of Crowsnest Pass, AB (Kondla and Guppy 2002). The male specimen illustrated in Bird et al. (1995) under the name *florus* is actually *L. helloides*.

1127.1 ***Lycaena nivalis*** – Known from MT, just south of Waterton Lakes National Park; this species may be found in the Waterton–Crowsnest area in AB.

1128 ***Lycaena mariposa*** – AB populations have usually been assigned to the subspecies *penroseae* Field. However, a review of the original description and a comparison of AB specimens with those from near the type locality of *penroseae* reveal that this assignment is inappropriate and no subspecific name is used herein. No taxonomic review of the nominal species *mariposa* has been conducted in the recent literature so it is not certain that AB populations are really conspecific with the taxon *mariposa*. Holland (1931) considered the taxa *mariposa* and *charlottensis* (Holland) to be distinct species and there are no known populations resembling nominate *mariposa* in Canada.

1129 ***Satyrium semiluna*** – Long thought to be a subspecies of *S. fuliginosa* (Edwards). *Satyrium semiluna* is herein treated as a full species distinct from *S. fuliginosa* for the reasons provided by Warren (2005); this treatment is also congruent with independent assessment by Kondla (2003). This species is known in AB from only one very local population in Waterton Lakes National Park and is of concern to conservationists in Canada. It has been assessed as "endangered" by the Committee on the Status of Endangered Wildlife in Canada and is protected under the Species At Risk Act (COSEWIC 2009a). True *S. fuliginosa* is a southwestern species that does not occur in AB.

1130 ***Satyrium acadica*** – Populations in western Canada have in the past been referred to either subspecies *watrini* Dufrane or subspecies *montanensis* Watson and Comstock. In the absence of information to clarify the matter, no subspecific name is used herein.

1131 ***Satyrium sylvinus* ssp. *nootka*** – AB specimens have been misidentified in earlier works (e.g., Bowman 1951) as *S. californicum* (Edwards), which does not occur in AB. This taxon has also been misidentified as *S. liparops aliparops* (see note 1133 on *S. liparops fletcheri*).

1132 ***Satyrium titus* ssp. *immaculosus*** – This taxon was listed under the genus name *Harkenclenus* in Bird et al. (1995); it is herein listed under *Satyrium* in keeping with the current popular approach. Populations in the Peace River area are not subspecies *immaculosus* but no appropriate name is available. No AB populations can be reasonably assigned to the nominate subspecies in light of the review by Gatrelle (2004).

1133 ***Satyrium liparops* ssp. *fletcheri*** – Bird et al. (1995) treated populations from the southern prairies as subspecies *aliparops* (Michener and dos Passos) and populations from the northern prairies and parkland as subspecies *fletcheri*, and stated that populations in the Peace River parkland are an undescribed subspecies. However, the reported character difference is inconsistent with the original description of subspecies *aliparops*. *Satyrium liparops aliparops* is a mountain taxon with the type locality in CO, so we treat the AB prairie and parkland populations as subspecies *fletcheri*. Guppy and Shepard (2001) treated the populations in Peace River parkland as subspecies *fletcheri* and the southern populations as the nominate subspecies.

1133.1 ***Satyrium saepium*** – Known from Glacier County, MT, just south of Waterton Lakes National Park, and from southern BC, from several points just across the border from AB. It may be found in the Rocky Mountains in AB where its host plant *Ceanothus velutinus* Dougl ex Hook. (Rhamnaceae) is present.

1133.2 ***Callophrys affinis*** – Known from MT, just south of the AB border in the Milk River – Writing-On-Stone area; it will probably be found in adjacent AB. It is known in Canada from the extreme south-central part of BC.

1134 ***Callophrys sheridanii*** – Populations in AB were assigned to the nominate subspecies in Bird et al. (1995). This assignment is clearly incorrect but it is not clear what other subspecific name, if any, is most appropriate to use and thus none is assigned herein. The AB populations have also been assigned to subspecies *neoperplexa* Barnes and Benjamin by Layberry et al. (1998) and to *newcomeri* Clench by Guppy and Shepard (2001). Genetic data suggest the AB and BC populations are separate gene pools but the taxonomic implications of this are as yet unclear. Bowman (1951) treated AB populations as *C. dumetorum* (Boisduval), but that name is now considered to apply only to a taxon restricted to habitats in CA and OR (Pyle 2002).

1134.1 ***Mitoura gryneus* ssp. *siva*** – Known from the extreme south of SK, in Grasslands National Park, and from MT south of AB. This species could be found in southern AB

along the Milk River drainage or in Waterton. Guppy and Shepard (2001) treated the taxon *siva* as a full species, distinct from *M. gryneus*.

1135 ***Mitoura spinetorum*** – It is possible that AB populations are members of the subspecies *ninus* Edwards. However, this matter has not been researched yet. Researchers are divided with respect to genus group boundaries for *Callophrys*, *Cisincisalia*, *Deciduphagus*, *Incisalia*, and *Mitoura*. Some workers, for example, Johnson (1992), treat them as separate genera; others, including Layberry et al. (1998) and Pelham (2008), combine them all within *Callophrys*. Under the former approach *spinetorum* is placed in the genus *Cisincisalia*; under the latter it is placed in *Callophrys*. We have adopted an intermediate approach, advocated by Pyle (2002), and recognize the genera *Callophrys*, *Mitoura*, and *Incisalia*.

1136 ***Incisalia augustinus*** – The type locality of *augustinus* is Fawcett, AB (dos Passos 1943). The subspecies *iroides* (Boisduval) was treated as a distinct species by Guppy and Shepard (2001), following its historic treatment (Holland 1931; McDunnough 1938c; dos Passos 1943). It is treated here as a subspecies of *I. augustinus* following Pyle (2002); this decision is supported by recent barcode evidence (BCS, unpublished data). Subspecies *iroides* and *augustinus* are not readily separable where they occur in sympatry in the southern AB foothills. See comment on genus placement in note 1135 on *Mitoura spinetorum*.

1138 ***Incisalia polios* ssp. *obscurus*** – Guppy and Shepard (2001) assigned AB populations to the nominate subspecies.

1139 ***Incisalia niphon* ssp. *clarki*** – AB populations are usually ascribed to the subspecies *clarki* and this approach is tentatively used herein. However, this matter needs to be reviewed, as does the assignment of AB populations to the taxon *I. niphon*. The male specimen figured in Bird et al. (1995) is actually a female *I. eryphon* (Boisduval).

1140 ***Incisalia eryphon*** – The subspecies status of AB populations is unclear so no subspecific name is used herein.

1141 ***Strymon melinus*** – The subspecies status of AB populations is unclear; Bird et al. (1995), Layberry et al. (1998), and Guppy and Shepard (2001) assigned these populations to subspecies *franki* Field but Thormin et al. (1980) noted that they do not fit well with any described subspecies.

1142 ***Cupido amyntula* ssp. *albrighti*** – The genus treatment follows Kudrna (1986) and Warren (2005); most recent Canadian works, including Bird et al. (1995) and Layberry (1998), have placed this species in *Everes*, now considered to be a subgenus of *Cupido*. The traditional designation of western Canadian populations as subspecies *albrighti* is followed herein but taxonomic review of these populations is needed.

1143 ***Celastrina lucia*** – This taxon was listed as a subspecies of *C. ladon* (Cramer) in Bird et al. (1995) and Layberry et al. (1998), but more recent research has shown that the name *ladon* properly applies to a different species with a specialized scale structure, that has been reported to occur in sympatry with *C. lucia* (Nielsen 1999; Pavulaan and Wright 2005). Thus we revert to the original usage of the taxon *C. lucia* as a distinct species. *Celastrina ladon* does not occur in AB.

1144 ***Celastrina echo* ssp. *nigrescens*** – This taxon was listed as a subspecies of *C. ladon* (Cramer) in Bird et al. (1995); it has subsequently been widely accepted as a distinct species from both *C. ladon* and from *C. lucia* (Kirby). See, for example, Guppy and Shepard (2001) and Warren (2005). It is also possible that the taxon *nigrescens* may be a full species distinct even from *C. echo*. This situation warrants further study.

1145 ***Celastrina neglecta* ssp. *argentata*** – Known in AB only from a few summer-flying specimens (Buffalo Lake, collected by G. J. Hilchie; Patricia, collected by B. and J. Beck) that are visually consistent with the taxon *argentata*, which may or may not be conspecific with *C. neglecta*. The arrangement used herein follows Layberry et al. (1998) and is the best available at this time. Pelham (2008) did not recognize any subspecies of *C. neglecta*.

1146 ***Euphilotes ancilla*** – Listed in Bird et al. (1995) as a subspecies of *E. enoptes* (Boisduval), but true *E. enoptes* does not occur in Canada. Research has shown that the genus *Euphilotes* is a hotbed of species diversity and it is likely that all distinct species in western North America have not yet been identified. See, for example, Pratt (1994), Pratt and Emmel (1998), and Warren (2005). The listing of this species herein follows Layberry et al. (1998) and Pratt and Emmel (1998), but AB populations presently thought to be members of this species may turn out to be members of another taxon. The common name Rocky Mountain Dotted Blue, used by some authors, is not used herein because it is entirely misleading. This butterfly is a prairie species (if we assume that it is in fact the same species as the taxon *E. ancilla* described from UT) in Canada and thus a better common name suggested by Miller (1992) has been used herein.

1147 ***Glaucopsyche piasus* ssp. *daunia*** – AB populations were assigned to subspecies *toxeuma* Brown in Guppy and Shepard (2001), described from the Okanagan Valley of BC (type locality: Summerland), but the AB populations are closer in appearance to *daunia* described from CO.

1148 ***Glaucopsyche lygdamus* ssp. *afra*** – This species name is applied to AB populations with caution, as it is doubtful that true *G. lygdamus* is present in Canada. Populations in AB have usually been referred to the subspecies *couperi* Grote, but gross visual differences between these populations and the subspecies *couperi* make this treatment inappropriate. The subspecies *oro* (Scudder) has also been applied, by Bird et al. (1995), to populations in the extreme southwest of AB but populations in southern AB are not visually consistent with that taxon either. The subspecific name *afra* is listed herein as the only subspecific name that can reasonably be applied to some AB populations. There are additional phenotypic entities in AB that have no available name that can be reasonably applied to them, and some of these may prove to be separate species rather than conspecific with *afra*.

1149a ***Plebejus idas* ssp. *scudderii*** – The status of populations currently grouped under the name *idas* is uncertain. Most recent workers, including Bird et al. (1995), Guppy and Shepard (2001), and Pelham (2008), consider *P. idas* to be a Holarctic species. This treatment is supported by Nice et al. (2002, 2005). Others (Balint and Johnson 1997; Scott et al. 2006) consider North American populations to be a distinct species and apply the name *scudderii* to them. The latter view is probably correct but we use the name *idas* as a species placeholder, with *scudderii* and *atrapraetextus* Field as subspecies of this taxon, pending a more detailed examination of this unresolved issue. Additional research is needed to develop a full picture of species and subspecies boundaries in the group of taxa containing *atrapraetextus*, *P. anna* (Edwards), *P. idas* (Linnaeus), and *P. melissa* (Edwards) in western Canada. Herein we apply the subspecific name *scudderii* to boreal forest populations of *P. idas* that feed on *Vaccinium* (Ericaceae) in AB. The genus taxonomy used herein follows Balint and Johnson (1997) but see also Pratt et al. (2006) for an allozyme and genetic distance analysis of sundry Polyommatini. The genus name *Plebejus* has often been spelled *Plebeius* (e.g., Guppy and Shepard 2001).

The spelling of *Plebejus* is used here, in accordance with the review of this matter by Balint et al. (2001).

1149b ***Plebejus idas* ssp. *atrapraetextus*** – This name is used for the Fabaceae-feeding populations of *P. idas* from the southwestern mountains that are visually distinct from the subspecies *scudderii* (Edwards) of the boreal forest. Geographical patterns in genitalic morphology suggest that these populations may be the result of interbreeding between *P. idas* and *P. melissa* (Edwards) in the southern foothills of AB, producing a range of morpho-types including intermediates between mountain "*idas*" and *melissa* in contact zones (BCS, unpublished data). In contrast, Scott et al. (2006) considered *atrapraetextus* to be a full species. We treat these populations herein as *P. idas atrapraetextus* pending further research. A similar hybridization event in the Sierra Nevada appears to have given rise to a new species (Nice et al. 2002). See comments on the status of North American populations of *P. idas* in note 1149a on *P. idas scudderii*. The Fabaceae-feeding central and northern mountain populations are unlike either typical *atrapraetextus* or *scudderii*, but no subspecific name is available for that taxon.

1150 ***Plebejus melissa*** – Two, or possibly three, broods occur in AB. The male specimen illustrated in Bird et al. (1995) as *P. melissa* is actually *P. idas scudderii* (Edwards).

1151 ***Aricia saepiolus* ssp. *amica*** – Most AB populations are referable to subspecies *amica*. However, there are also specimens that are visually similar to the taxa *aehaja* Behr and *rufescens* Boisduval. At this time the possible taxonomic significance of this phenotypic diversity is not known. See also Kondla and Guppy (2002) and Scott et al. (2006). The genus taxonomy of *Aricia* used herein follows Balint and Johnson (1997); Gorbunov (2001) included *Aricia* species within a "supergenus" concept of *Plebejus*.

1152 ***Aricia icarioides* ssp. *pembina*** – Most populations of this species in AB and interior BC have traditionally been referred to the subspecies *pembina*. However, there are differences in appearance between populations in prairie AB and those in southern interior BC and it is not certain that the name *pembina* should really be applied to either set of populations. This name is retained herein as a matter of tradition, pending further work.

1154 ***Aricia lupini*** – Populations listed under the name *Plebejus (= Aricia) acmon* (Westwood) in Bird et al. (1995), Layberry et al. (1998), and Guppy and Shepard (2001) are herein treated in accordance with the revised approach suggested by Scott (1998b): he limited application of the species *A. acmon* to the west coast area from WA to Baja California and placed all other populations under *A. lupini*. This view was subsequently adopted by Opler (2003), who correctly noted that research is needed to clarify how many species-leval taxa actually exist in the *acmon–lupini* complex in western Canada and United States. See Warren (2005) for a recent discussion of this issue. It is possible that the subspecific name *lutzi* (dos Passos) might apply to some AB mountain populations but this is not certain. It appears that AB populations are taxonomically undescribed at the species and subspecies level and the name *A. lupini* is used herein simply because there is no better name available. AB appears to be home to two or three *Aricia* species that have no name and are lumped herein owing to lack of knowledge about how they should be classified. Use of the subspecific name *spangelatus* (Burdick) by some authors (e.g., Layberry et al. 1998) for AB populations is not appropriate because that taxon is limited to the Olympic Peninsula of WA.

1155 ***Albulina optilete*** – All North American populations of this insect have traditionally been considered to be conspecific with the Eurasian species *A. optilete* and to consist of only one subspecies, *yukona* (Holland). However, recent examination of AB specimens

reveals that they differ in multiple characters from *yukona* and thus no subspecific name is applied herein. Treatment of North American populations is by no means unanimous in the literature. See, for example, Holland (1931), who treated *yukona* as a species distinct from *optilete*. It appears that nothing has been published to support a robust decision for a lumped or a split interpretation and the popular use of the name *optilete* is followed herein as a matter of convenience. The genus taxonomy of *Albulina* used herein follows Balint and Johnson (1997); Gorbunov (2001) included *Albulina* species within a "supergenus" concept of *Plebejus*.

1156a ***Agriades glandon* ssp. *lacustris*** - See comments on *A. glandon* in note 1156b on *A. glandon* megalo. The name *lacustris* is applied to populations in the Canadian Shield in the far northeastern part of AB and is tentatively associated with the species *A. glandon* pending the results of further research. The name *manitoba* Lamas was erected recently as a replacement name for *lacustris* (Lamas 2008), but this is unnecessary for its current placement in the genus *Agriades*.

1156b ***Agriades glandon* ssp. *megalo*** – The status of taxa traditionally referred to under the name *A. glandon* has not been fully resolved. Southern Canadian populations probably represent a species distinct from populations of the European Alps (*A. glandon glandon*) and from arctic populations (*A. glandon aquilo* (Boisduval)). This view is supported by a combination of published and unpublished evidence, including external visual differences, range overlap in some taxa, complete absence of documented intergradation, biological differences, structural differences in male genitalia, and genetic differences (Ferris 1989; Acorn 1993; Emmel and Emmel 1998; Schmidt et al. 2003). If these southern Canadian populations do represent a distinct species, the correct name for them would be *A. megalo*. However, we use the species name *glandon* as a placeholder, pending further work on this group. The subspecific name *megalo* is herein applied to cordilleran populations in AB. Bird et al. (1995) considered *rustica* (Edwards) to be a full species and treated *megalo* as a subspecies of it. Some workers, including Pelham (2008), treat *Agriades* as a subgenus within *Plebejus*.

1156c ***Agriades glandon* ssp. *rustica*** – See comments on *A. glandon* in note 1156b on *A. glandon megalo*. The name *rustica* is listed herein as a subspecific name of *A. glandon* purely as a placeholder in the absence of a better name. AB lepidopterists have long known that the populations of *Agriades* primarily located in the prairies that are usually called *rustica* (and even *lacustris* (Freeman) by some authors) are really not the same as populations of *glandon*, *rustica*, or *lacustris*; there are differences in the "barcode" fragment of *cox1* gene, and a zone of sympatry with *A. glandon megalo* (McDunnough) exists in the Porcupine Hills and near Jasper (BCS, unpublished data). *Agriades glandon rustica* has a partial double brood in AB (Kondla and Schmidt 1991).

1157 ***Danaus plexippus* ssp. *plexippus*** – Adults migrate from overwintering sites in southern United States and Mexico each year to as far north as southern AB; they produce a brood in AB that flies south in late summer. This species is federally protected by the Species At Risk Act; it is listed as being of "special concern," primarily because of threats to its overwintering sites (COSEWIC 2009a).

1158 ***Limenitis arthemis* ssp. *rubrofasciata*** – Some workers (e.g., Miller and Brown 1981; Willmott 2003) place North American *Limenitis* representatives in a separate genus, *Basilarchia*, on the basis of structural and genetic differences (Mullen 2006). We prefer to treat *Basilarchia* as a subgenus of *Limenitis,* as per Opler and Warren (2003), pending a thorough review. The type locality of *rubrofasciata* consists of the collection

locations of the syntypes because no single name-bearing type exists. The type locality is thus as follows: Croker, SK; Cartwright, MB; Calgary, AB.

1159 ***Limenitis weidemeyerii* ssp. *oberfoelli*** – The species *L. weidemeyerii* is of concern to conservationists in Canada. It is listed and protected federally as a species of "special concern" (COSEWIC 2009a). Although it is also listed provincially as being of "special concern" (Alberta Sustainable Resource Development 2007), arthropods have yet to be formally protected by Alberta's Wildlife Act.

1160 ***Limenitis lorquini* ssp. *itelkae*** – Listed as subspecies *burrisoni* [sic] (Maynard) in Bird et al. (1995). The correct spelling is *burrisonii*. The taxonomic identity of the name *burrisonii* is a matter of debate and active research at this time. Consequently, *burrisonii* is treated as a nomen dubium herein.

1161 ***Limenitis archippus*** – Listed as the nominate subspecies in Bird et al. (1995) but no subspecific name is used herein. AB populations do not agree in appearance with the nominate subspecies from eastern United States nor do they look like populations bearing other available names.

1163 ***Boloria alaskensis*** – Listed as *B. napaea* (Hoffmansegg) in Bird et al. (1995) and Layberry et al. (1998), but research by various people going back to Crosson du Cormier (1977) has demonstrated that this past lumping of North American and European taxa is unwarranted. See Dubatolov (1992), Kosterin (2000), Tuzov (2000), Gorbunov (2001), and Tuzov and Bozano (2006) for details. The broad concept of the genus *Boloria* is maintained in this list, although it is acknowledged that on the basis of structural and molecular characters it would be equally correct to confine the name *Boloria* to *B. alaskensis*, place *B. eunomia* (Esper) in the genus *Proclossiana*, and place the remainder of the AB taxa in the genus *Clossiana*. See Tuzov and Bozano (2006) for recent information on this and related matters.

1164a ***Boloria eunomia* ssp. *dawsoni*** – The subspecific name *triclaris* (Hübner) listed by Bird et al. (1995) and by Bowman (1951) does not apply to AB populations (Guppy and Shepard 2001). Dark populations in the Canadian Shield of northeastern AB are clearly referable to subspecies *dawsoni*. However, most AB populations, including high-elevation populations south of the range of subspecies *nichollae* (Barnes and Benjamin), are rather pale and are not consistent with *dawsoni* populations. However, they are placed here pending further taxonomic review of populations across AB. Taxonomic review is also needed to determine if AB and North American populations really are conspecific with nominate *B. eunomia* of Europe and if there is only one species in North America. It appears that nothing has been published to support the popular conspecific interpretation; unpublished *cox1* genetic data show differences between populations of the North American taxon *denali* (Klots), populations commonly ascribed to the taxon *dawsoni*, and a population of the taxon *ossianus* (Herbst) from the Polar Urals of Russia.

1164b ***Boloria eunomia* ssp. *nichollae*** – High-elevation mountain populations from the North Saskatchewan River to Grande Cache appear to be consistent with this subspecies. It is not an elevational form (contrary to the view of Ferris and Groothuis 1970) because high-elevation populations elsewhere in the Canadian Rocky Mountains are not known to show this phenotype. In fact, high-elevation populations from the northern terminus of the Rocky Mountains (Pink Mountain and Summit Lake, BC) are brighter orange with fewer dark markings than subspecies *nichollae* and are very similar to populations found at lower elevations. See Bird et al. (1995) and Guppy

and Shepard (2001) for details. Holland (1931) treated this taxon as a full species and a taxonomic review is needed. The type locality of *nichollae* was restricted to Wilcox Pass, Jasper National Park, by Pike (1980).

1165 ***Boloria myrina*** – Treated herein as a species separate from *B. selene* ([Denis and Schiffermüller]) of the Palearctic (see entry A7 in the Appendix). No subspecific name is used herein, consistent with the review of Kohler (1977), although use of the name *atrocostalis* (Huard) may be warranted for some populations in the extreme east-central part of AB and possibly west to the Edmonton area. The geographical variation of this taxon in western Canada should be reviewed further because of the presence of specimens that are visually indistinguishable from the taxon *tollandensis* (Barnes and Benjamin) found in the more southern Rocky Mountains.

1166 ***Boloria bellona* ssp. *jenistai*** – The type locality of *jenistai* is the vicinity of Rivercourse, AB (Kondla 1996).

1167 ***Boloria frigga* ssp. *saga*** – It is unlikely that AB populations are the same species as the Eurasian *B. frigga* (type locality: Lappland, Sweden), because a comparison of the arctic taxon with the boreal taxon in North America appears to reveal species-level differences, and the North American populations are presumably more closely related to each other than to the Scandinavian populations. A careful review of the alpha taxonomy of this group is needed. There is a substantial difference in appearance between the probable North American representative of *B. frigga,* namely the taxon *gibsoni* Barnes and McDunnough found in tundra habitat (also listed by authors under the name *alaskensis* (Holland) when placed in the genus *Clossiana*), and the taxon *saga* found primarily in boreal wetlands. These taxa are genetically different (as evidenced by the barcode fragment of the *cox1* gene) and there appears to be no evidence of intergradation where these species approach each other on the landscape. The decision to lump *gibsoni* and *frigga* as one species despite these differences and well-known differences in habitat appears to be based on nothing more than a very superficial visual similarity between these taxa. Layberry et al. (1998) noted that some researchers believe *saga* and *gibsoni* to be different species. However, the arrangement used in Bird et al. (1995) is repeated herein owing to taxonomic inertia and owing to uncertainty concerning the phenotypic entity to which the name *saga* actually applies.

1168 ***Boloria improba* ssp. *nunatak*** – AB populations were treated as subspecies *youngi* (Holland) by Guppy and Shepard (2001). The type locality of *nunatak* is Torrens River, AB.

1169 ***Boloria epithore* ssp. *uslui*** – Guppy and Shepard (2001) argued that populations in southern BC are all subspecies *chermocki* (Perkins and Perkins) because they found no difference between subspecies *chermocki* and *uslui*, and they also mapped AB populations as subspecies *chermocki*. Pelham (2008) also treated *uslui* as a synonym of *chermocki*. However, examination of *chermocki* specimens from northern CA and OR reveals that they do look different from specimens from southern interior BC and southwestern AB. Consequently, the taxonomic treatment of Perkins and Meyer (1973) with nomenclatural adjustment is used herein, pending evidence to demonstrate otherwise. The female specimen illustrated in Bird et al. (1995) as subspecies *uslui* is actually a specimen of subspecies *chermocki* from WA.

1170 ***Boloria alberta*** – The type locality of *alberta* is the vicinity of Lake Louise, AB (Kondla 1996).

1171 ***Boloria astarte*** – Some workers (e.g., Guppy and Shepard 2001) consider this taxon to be a subspecies of the Palearctic *B. tritonia* (Boeber). The type locality of *astarte* is Rock Lake, AB (Shepard 1984).

1172 ***Boloria freija*** – Populations in AB and much of the rest of North Amercia have traditionally been assigned to the nominate subspecies, which occurs in northern Europe. However, this relationship has never been demonstrated. Between AB and northern Europe there are intervening populations of other described subspecies of *B. freija*. Consequently, we do not assign a subspecific name herein.

1173 ***Boloria chariclea* ssp. *grandis*** – North American representatives of the problematic *chariclea* complex have traditionally been treated as two species, *B. chariclea* of the tundra and *B. titania* (Esper) of the boreal forest. Shepard (1998) treated all North American representatives of the complex as *B. chariclea* (Schneider) and considered *B. titania* to be restricted to the Old World. AB populations were thus treated as *B. chariclea* by Bird et al. (1995), Layberry et al. (1998), and Guppy and Shepard (2001). Simonsen (2005) challenged the single genitalic character that Shepard used to support lumping all of the North American taxa in this complex; he suggested that *B. chariclea* may represent the ancestral stock from which European and North American populations traditionally referred to as *B. titania* descended, so it is in fact polyphyletic. The *chariclea* group appears to have incompletely speciated, with taxa behaving as distinct species in some areas and intergrading in others; see discussion in Layberry et al. (1998) and Simonsen (2005). Holland (1931), McDunnough (1938c), Dos Passos (1964), and Miller and Brown (1981) recognized more than one species of this complex in North America, and this view is supported by unpublished DNA sequence data. Although species boundaries in North America certainly are not definitive and *grandis* may in fact represent a distinct species, we retain *grandis* as a subspecies of *B. chariclea* for AB populations at this time.

1174 ***Speyeria cybele* ssp. *pseudocarpenteri*** – Simonsen (2006) suggested a reversion to the treatment of *Speyeria* as a subgenus of *Argynnis*, which was popular many years ago. Although this has always been a valid taxonomic option it is not used herein.

1175 ***Speyeria leto*** – Although this taxon has been treated as a subspecies of *S. cybele* in most recent literature, including Pelham (2008), we treat it as a distinct species (see entry A6 in the Appendix). No subspecific name is used herein because AB populations are not consistent with any named subspecies.

1176a ***Speyeria aphrodite* ssp. *ethne*** – This subspecies was not listed in Bird et al. (1995) or Layberry et al. (1998) but populations in the extreme south of AB are consistent with it.

1177.1 ***Speyeria coronis* ssp. *snyderi*** – Reported as occurring in MT near the AB border by Layberry et al. (1998). On the Butterflies of Canada Web site (CBIF 2002) this taxon is mentioned in the text as having been collected once in AB, but no AB record appears in the database on that Web site and no voucher specimen is known so this is considered to be an error. The presence of *S. coronis* in AB is possible but remains unverified and thus is treated as hypothetical herein.

1178 ***Speyeria zerene* ssp. *garretti*** – Traditional treatment of AB populations as subspecies *garretti*, following Bird et al. (1995) and Layberry et al. (1998), is maintained herein but this issue warrants further consideration. Bowman (1951) considered AB populations to be subspecies *platina* (Skinner), but that subspecies occurs only to the south of AB. Pelham (2008) considered the taxon *garretti* to be a synonym of *S. zerene picta*

(McDunnough), a western subspecies that Guppy and Shepard (2001) treated as occurring only as far east as the Okanagan Valley.

1179 ***Speyeria callippe* ssp. *calgariana*** – The type locality of *calgariana* is the head of Pine Creek, southwest of Calgary, AB (Kondla 1996). Populations in the Crowsnest Pass area appear to be more like the subspecies *semivirida* (McDunnough) and were treated so by Bird et al. (1995). Howe (1975) interpreted the taxon *calgariana* as being a subspecies of *S. nevadensis* (Edwards), confining the species concept of *S. callippe* to the area from southern CA to central OR. Although this is a plausible interpretation it is not used herein, pending further clarification of the matter.

1180 ***Speyeria egleis*** – One distribution record for AB was mapped as subspecies *albrighti* (Gunder) by Guppy and Shepard (2001) but no subspecific name is used herein on the basis of advice from L. P. Grey (personal communication) and S. Kohler (personal communication) that the populations from nearby Sweetgrass Hills, MT, are undescribed and not subspecies *albrighti*. It therefore seems unlikely that populations to the north are subspecies *albrighti* either. A voucher specimen from Whisky Gap is in NGK's collection in Calgary, AB.

1181 ***Speyeria atlantis* ssp. *hollandi*** – Recognition of *S. atlantis* and *S. hesperis* (Edwards) as distinct species follows Howe (1975), Klassen et al. (1989), Kondla (1992), Layberry et al. (1998), Scott et al. (1998), and most other subsequent authors.

1182a ***Speyeria hesperis* ssp. *brico*** – See note 1181 on *S. atlantis*. The name *brico* is available for mountain populations that have a more reddish ventral hindwing disk and reduced pale submarginal band on the ventral hindwing.

1182b ***Speyeria hesperis* ssp. *beani*** – See note 1181 on *S. atlantis*. The type locality of *beani* is Banff, AB.

1182c ***Speyeria hesperis* ssp. *dennisi*** – See note 1181 on *S. atlantis*. This taxon was listed at the species level as *S. electa* (Edwards) in Bird et al. (1995); use of the species name *S. hesperis* herein follows Scott et al. (1998). It was listed as subspecies *lais* (Edwards) in Bird et al. (1995) and Layberry et al. (1998) but subsequent research has revealed that the name compliant with the International Code of Zoological Nomenclature (ICZN 1999) is really *helena* dos Passos and Grey. However, there does not appear to be any significant difference between the taxon *dennisi* and populations of *helena* in southern lowland AB; *dennisi* is the older name so is used herein. Because the taxon *dennisi* Gunder was originally described as a form, Pelham (2008) considered both *dennisi* Gunder and *dennisi* dos Passos and Grey to be synonyms of *helena*. However, this is an incorrect interpretation of the code; dos Passos and Grey (1945) redescribed *dennisi* as a subspecies, thereby validating the name under their authorship.

1183 ***Speyeria hydaspe* ssp. *rhodope*** – Listed as subspecies *sakuntala* (Skinner) in most past books and lists but Kondla (2001a) explained why *rhodope* is the correct name for these populations.

1184a ***Speyeria mormonia* ssp. *opis*** – This name is applied to small and dark populations from the northern Rocky Mountains. Bowman (1951) reported these populations as subspecies *bischoffi* (Edwards), but that subspecies is restricted to AK and possibly YT and the extreme northwest of BC.

1185 ***Vanessa virginiensis*** – This is a migratory species that occasionally strays into AB from the east and south. It produces up to three generations per season in eastern Canada, which then return to warmer climates to overwinter. It is acknowledged that use of the genus name *Cynthia* Fabricius is a viable option for this species as well as for

*V. cardui* (Linnaeus) and *V. annabella* (Field). However, the more popular concept of including these species within the genus *Vanessa* is used herein.

1186 ***Vanessa cardui*** – This species regularly migrates into AB and can be very abundant in years when conditions are favorable in its overwintering areas in southwestern United States.

1187 ***Vanessa annabella*** – This species regularly migrates into southwestern AB; it overwinters in southwestern United States.

1189 ***Aglais milberti*** – The subspecific name *milberti* was used in Bird et al. (1995) but other literature (dos Passos 1938; Austin 1998) suggests that the subspecific name *furcillata* (Say) or *subpallida* (Cockerell) may be more appropriate for AB populations. No subspecific name is assigned herein pending clarification of this matter.

1190 ***Nymphalis j-album*** – Treated as a species distinct from the Eurasian taxon *l-album* (Esper) (= *vaualbum* ([Denis and Schiffermüller])) as discussed in entry A4 in the Appendix. This butterfly has traditionally been placed in either the genus *Nymphalis* or the genus *Polygonia*. More recently, Korshunov and Gorbunov (1995) erected the monotypic genus *Roddia* for it. Guppy and Shepard (2001) considered it to be closer to *Polygonia* than to *Nymphalis*. However, the most recent evidence strongly supports a sister-group relationship to *Nymphalis* (N. Wahlberg, personal communication). Whether it is considered to be part of a broader concept of the genus *Nymphalis* or placed in its own genus (*Roddia*) is a matter of personal preference; we prefer more inclusive genera and have opted herein for the former.

1191 ***Nymphalis californica*** – This species overwinters as an adult, but it is not yet known if it is capable of doing so in AB. Breeding in AB was confirmed by NGK in 2006.

1192 ***Nymphalis antiopa* ssp. *hyperborea*** – Most North American literature glosses over the existence of named subspecies in North America or asserts that populations in North America are the same as the nominate subspecies. However, review of study material and pertinent literature reveals that individuals in North America do not look like nominate *antiopa* from Scandinavia. Genetic (*cox1* barcode fragment) data also show a difference between Eurasian and North American specimens. Butterflies consistent with the taxon *hyperborea* are certainly present in AB. Low-elevation populations in the southern part of the province may be better assigned to the subspecies *lintnerii* (Fitch) but this matter requires further work. It is also noted that research is warranted with respect to recognition of *Euvanessa* Scudder as a full genus for this species.

1193 ***Polygonia interrogationis***- A rare stray in eastern AB, collected once in the Blackfoot Hills, near Lloydminster. This species probably does not overwinter in Canada but rather migrates from the United States to produce a second brood, which then migrates south to overwinter (Layberry et al. 1998).

1194a ***Polygonia satyrus* ssp. *satyrus*** – Southern populations appear to be sufficiently similar to the nominate subspecies that this name is used herein.

1194b ***Polygonia satyrus* ssp. *transcanada*** – The subspecific name *transcanada* is applied herein to northern populations. Pelham (2008) treated *transcanada* as a synonym of *P. satyrus neomarsyas* dos Passos.

1196 ***Polygonia oreas* ssp. *threatfuli*** – Alberta populations of this butterfly were incorrectly referenced as subspecies *silenus* (Edwards) in Bird et al. (1995) and are appropriately assigned to subspecies *threatfuli* by Guppy and Shepard (2001). See also Scott et al. (2006).

1197 ***Polygonia gracilis*** – No subspecific name is used herein because no described subspecies is consistent with the appearance of most AB populations. Layberry et al. (1998)

considered western Canadian populations to be undescribed. Bird et al. (1995) and Guppy and Shepard (2001) treated *gracilis* and *zephyrus* (Edwards) as separate species; Bird et al. (1995) noted that they could not be distinguished reliably and presented composite range maps for the two species. A minority of individual specimens in southwestern AB are consistent in appearance with the taxon *zephyrus*, but many specimens in multiple populations cannot be neatly categorized as being *zephyrus* or the unnamed *P. gracilis* subspecies and are intermediate in appearance. The taxon *zephyrus* is herein considered conspecific with *gracilis* on the basis of published (e.g., Scott 1984) information and extensive review of long series on a continental scale by NGK.

1198a ***Polygonia faunus* ssp. *faunus*** – AB populations have frequently been assigned to the subspecies *rusticus* (Edwards). However, the taxon *rusticus* does not resemble any known Canadian populations and appears to be limited to the Sierra Nevada region of CA and NV. Most AB populations are referable to the nominate subspecies.

1198b ***Polygonia faunus* ssp. *arcticus*** – Some specimens consistent with the subspecies *arcticus* are known from northern areas of AB and south along the mountains to the Sundre area. Work is needed to elaborate the distribution of specimens attributable to this subspecies and to determine if *arcticus* phenotypes simply occur as a minority phenotype in some populations. It is interesting that Leussler (1935) referred to structural differences between the taxon *arcticus* and the taxa *faunus* and *hylas* (Edwards). The taxon *arcticus* has also been treated as a subspecies of *P. hylas* (dos Passos 1977). Scott (1984) considered *arcticus* to be a junior subjective synonym of *hylas*. That approach is not used herein because specimens of the taxon *arcticus* are easily distinguishable from those of the taxon *hylas* and populations of these two taxa are geographically separated by other *faunus*-group entities. The nominal species *P. faunus* as construed in recent literature is in need of taxonomic review.

1198c ***Polygonia faunus* ssp. *cenveray*** – Populations of smaller and grayer individuals from the southwest corner of AB are assigned to this recently described subspecies (Scott et al. 2006). Pelham (2008) considered *cevernay* to be a synonym of *P. faunus arcticus* Leussler.

1199 ***Euphydryas gillettii*** – The broader concept of *Euphydryas* is used at the genus level herein, although it is acknowledged that a more "split" arrangement assigning the taxon *gillettii* to the genus *Hypodryas* and the remainder of the AB taxa to the genus *Occidryas* has also been proposed.

1200a ***Euphydryas editha* ssp. *hutchinsi*** – It may be that this taxon is a different species from the high-elevation cordilleran taxon *beani* (Skinner) and in turn it may be that neither taxon is really a subspecies of *E. editha*. This latter possibility is supported by phenotypic differences, ecological differences, genetic data (*cox1* gene), and apparent genitalic differences illustrated in Gunder (1929). The various taxa have been lumped under the umbrella of *E. editha* on the basis of very superficial visual similarity and perceived similarity in one male genitalic character. That traditional species-level assignment is repeated herein pending further research. McDunnough (1938c) treated *hutchinsi* as a full species distinct from both *E. editha* and the taxon *beani*, which he placed as a subspecies of *E. colonia* (Wright). It is not known if he was aware of the paper by Gunder (1929).

1200b ***Euphydryas editha* ssp. *beani*** – See comments in note 1200a on *E. editha hutchinsi*. The type locality of *beani* is the vicinity of Lake Louise, AB (Kondla 1996). Species affiliation with *E. editha* is dubious and this treatment is based on one genitalic character. The taxon *beani* was initially described by Skinner (1897) as a high-elevation form

of *E. anicia* (Doubleday) and subsequently lumped with *E. editha* by Gunder (1929). This has been the popular but not unanimous view of subsequent workers. Holland (1931) treated *E. beani* as a full species. Taxonomic review is needed.

1201 ***Euphydryas anicia* ssp. *anicia*** – Treated by Layberry et al. (1998) as a subspecies of *E. chalcedona* (Doubleday), but considered herein to be a distinct species, following Guppy and Shepard (2001). True *E. chalcedona* occurs only in CA and a small portion of southern OR. Populations of *E. anicia* in AB are not all alike. The nominate subspecific name can safely be applied to populations in the Rocky Mountains of west-central AB because of the type locality: Rock Lake, AB (Shepard 1984). Populations in southwestern AB appear to be undescribed and the subspecies affinities of populations on the Milk River Ridge and the Cypress Hills are also problematic.

1202 ***Euphydryas bernadetta*** – Treated as a species distinct from *E. anicia* (Doubleday) for the reasons discussed in entry A5 in the Appendix.

1203 ***Chlosyne gorgone*** – This and other species treated under the genus name *Charidryas* in Bird et al. (1995) are herein listed under the genus name *Chlosyne*, which is the more popular treatment.

1204 ***Chlosyne acastus*** – No subspecific name is assigned to AB populations pending the results of taxonomic review.

1205 ***Chlosyne palla*** – Bowman (1951) treated this species as *C. palla* and as *C. palla whitneyi* (Behr). The latter treatment is erroneous; *C. whitneyi* is restricted to the Sierra Nevada in CA and is not conspecific with *C. palla*. No subspecific name is assigned to AB populations pending the results of taxonomic review.

1206 ***Chlosyne damoetas* ssp. *altalus*** – The type locality of *altalus* is Nigel Pass, Jasper National Park, AB. Some authors have recently concluded that *C. damoetas* is conspecific with the Sierra Nevada taxon *C. whitneyi* (Behr) and give all North American populations this name at the species level because *whitneyi* is the older name. Evidence to support this interpretation has not been published and thus we maintain recognition of AB populations as *C. damoetas*. The specimen figured in Bird et al. (1995) is not *C. damoetas* but rather *C. palla* (Boisduval).

1206.1 ***Phyciodes pallida*** – Known from the southern interior of BC as far east as Cranbrook and from south of AB in MT. It may be found in the extreme south of AB.

1207 ***Phyciodes tharos* ssp. *orantain*** – The status of these populations of *P. tharos* that are endemic in the great plains has not been resolved. *Phyciodes* taxonomy in general is not settled in North America and new taxa, including a new species, have been recently described. Scott (1998a) described the taxon *orantain* but was refreshingly candid about uncertainty with respect to species-level taxonomy for this entity. He listed three taxonomic options for this entity, including treating it as a full species. More recently, Scott (2006) treated the taxon *orantain* as a subspecies of *P. tharos*, and that approach is used herein.

1208 ***Phyciodes cocyta* ssp. *selenis*** – Recent neotype designation by Scott (2006) clarifies application of the name *selenis*.

1209 ***Phyciodes batesii* ssp. *saskatchewan*** – AB populations were listed in Bird et al. (1995) and Guppy and Shepard (2001) under the subspecies *lakota* Scott but more recently Scott (2006) concluded that AB populations are referable to subspecies *saskatchewan*. The type locality of *saskatchewan* is Halfway Lake, near Clyde, AB.

1210 ***Phyciodes pulchella* ssp. *owimba*** – This species was listed by Layberry et al. (1998) and Guppy and Shepard (2001) under the name *P. pratensis* (Behr), but Kondla and Guppy (2002) explained that the correct name is *P. pulchellus*. See also Scott (1994).

1211 ***Lethe anthedon* ssp. *borealis*** – Although some researchers do not recognize *borealis* as a valid subspecies, the name is maintained for AB populations in accordance with Masters (1971), Bird et al. (1995), Grkovich and Pavulaan (2003), and Schmidt et al. (2003). *Lethe anthedon* has been placed by most recent workers in the genus *Enodia*. However, Pelham (2008), following Scott (1986) and others, considers *Enodia* and *Satyrodes* (previously placed in separate tribes) to be subgenera of *Lethe*. When Bird et al. (1995) was published, this species was known only in the eastern parkland area of AB as far west as Lac La Biche. Since that time it has rapidly expanded its range westward, becoming abundant in the Edmonton area in 2006.

1212 ***Lethe eurydice*** – No subspecific name is used herein pending availability of study material to clarify the matter. *Lethe eurydice* was placed until recently in the genus *Satyrodes*, now considered a subgenus of *Lethe*; see note 1211 on *L. anthedon borealis*.

1213a ***Coenonympha inornata* ssp. *benjamini*** – See comment on *C. inornata* in note 1213b on *C. inornata mackenziei*. The type locality of *benjamini* is Waterton Lakes, AB.

1213b ***Coenonympha inornata* ssp. *mackenziei*** – North American populations (including the taxa *mackenziei*, *benjamini* McDunnough, *californica* Westwood, *ochracea* Edwards, and others) have often been placed within a broader concept of the European species *C. tullia* (Müller), but Kodandaramaiah and Wahlberg (2009) conclusively showed that North American taxa are not this species, and we therefore treat the AB taxon as *C. inornata* (see entry A8 in the Appendix). The subspecies *mackenziei* occurs in lowland relict grassland in the Canadian Shield region of northeastern AB. Bird et al. (1995) considered the taxon *ochracea* to be a full species and treated the taxon *mackenziei* as a subspecies of it. Guppy and Shepard (2001) considered the taxon *californica* Westwood to be a full species and treated the taxon *mackenziei* as a subspecies of it.

1213.1 ***Megisto cymela*** – Known from central Canada as far west as Lake Diefenbaker, SK. There is a possibility this species could be found in parkland areas of southeastern AB.

1214 ***Cercyonis pegala* ssp. *ino*** – Bowman (1951) treated AB populations as subspecies *nephele* (Kirby), but that subspecies is not known to occur in western Canada. The type locality of *ino* is Calgary, AB.

1215 ***Cercyonis oetus*** – No subspecific name is assigned herein because it is not clear that AB populations are consistent with any named subspecies. This taxon was treated by Bird et al. (1995) and Guppy and Shepard (2001) as subspecies *charon* (Edwards). Layberry et al. (1998) referred to AB specimens as subspecies *silvestris* (Edwards), a name currently considered to apply to a subspecies of *C. sthelene* (Biosduval) from OR (Guppy and Shepard 2001; Pelham 2008).

1215.1 ***Erebia rossii*** – This species occurs in shrubby tundra and subarctic bogs in the Rocky Mountains of northeastern BC. It is also known from NT. It is possible that this species could be found in the Rocky Mountains in Willmore Wilderness Park or in subarctic habitat of the Cameron Hills and Caribou Mountains of the extreme north of AB.

1216 ***Erebia mancinus*** – This taxon was listed in Bird et al. (1995) as a subspecies of the European *E. disa* (Thunberg), but subsequent review (Layberry et al. 1998) has revealed that historical lumping (Warren 1936) was unwarranted and thus the taxon *mancinus*

is treated again herein as a full species, consistent with the original description. The type locality of *mancinus* is Rock Lake, AB (Shepard 1984).

1217 ***Erebia magdalena* ssp. *hilchie*** – This subspecies was originally described as subspecies *saxicola* by Hilchie (1990). However, Kemal and Koçak (2007) pointed out that *saxicola* Hilchie, 1990 is a junior primary homonym of *Erebia saxicola* Oberthur, 1876 and proposed the new name *hilchie*. The type locality of *saxicola* (= *hilchie*) is Adams Lookout, Willmore Wilderness Park, AB.

1218a ***Erebia epipsodea* ssp. *epipsodea*** – The type locality of *epipsodea* is Rock Lake, AB (Kondla 1996).

1218b ***Erebia epipsodea* ssp. *sineocellata*** – This taxon was listed in Bird et al. (1995) as subspecies *freemani* Ehrlich but we accept the conclusion of Guppy and Shepard (2001) that *sineocellata* is the older and valid name.

1219 ***Erebia discoidalis* ssp. *discoidalis*** – AB populations have traditionally been assigned to the subspecies *mcdunnoughi* dos Passos, treated here as a junior subjective synonym of nominate *discoidalis*.

1220 ***Erebia pawloskii*** – Reported in AB by Ehrlich (1958) and Bird et al. (1995) under the species name *E. theano* (Tauscher); a specimen in the AMNH exists, labeled "Calgary, NWT" (AB was a part of NT until 1905), but it is assumed to be mislabeled as no likely sites occur near Calgary. However, it may have been collected in AB, and there is a possibility that this species occurs in Willmore Wilderness Park. This is a biennial species, with some adults flying every year. Use of the species name herein follows Gorbunov (2001) and Guppy and Shepard (2001), recognizing that it is specifically distinct from *E. theano*, which we consider to be restricted to the Palaearctic. However, it has never been demonstrated that North American populations are conspecific with *E. pawloskii* or even that all North American populations are conspecific. Research on this matter is needed. The name *pawloskii* has often been mispelled in the literature as *pawlowskii*.

1222 ***Oeneis polixenes*** – AB populations were treated as subspecies *brucei* (Edwards) by Pike (1980), Bird et al. (1995), and Guppy and Shepard (2001). They were treated as subspecies *luteus* Troubridge and Parshall by Troubridge and Parshall (1988) and as subspecies *beringianus* Kurentsov by Layberry et al. (1998). There is insufficient information in the literature to determine which, if any, of these interpretations is most robust. Recent review of AB specimens by NGK also revealed the presence of numerous individuals that are consistent with the taxon *yukonensis* Gibson. Consequently no subspecific name is used herein, pending a review of AB populations.

1223a ***Oeneis balderi* ssp. *ridingiana*** – Grouped with *O. jutta* (Hübner) in Bird et al. (1995) and most other recent workers. Nothing has ever been published to explain why these North American butterflies should be treated as such. In contrast, Gross (1970), Kurentsov (1970), Murayama (1973), and Lukhtanov (1987) concluded that *O. jutta* does not occur in North America. Korshunov and Nikolaev (2002) also adopted *O. balderi* as the correct species-level name for northern North American populations. This approach is consistent with independent assessment by NGK. The name *balderi* is traditionally attributed to Hübner, but this particular work was published after Hübner's death, by Geyer (1837). Pelham (2008) considered the taxon *balderi* to be a synonym of *O. jutta balder* (Guérin-Méneville) but there is no indication that Geyer's *balderi* was an emendation or misspelling of *balder*. See Pelham (2008) for details.

1223b ***Oeneis balderi* ssp. *chermocki*** – Listed as a subspecies of *O. jutta* (Hübner) in Bird et al. (1995); see note 1223a on *O. balderi ridingiana*. This taxon was reported in south-

eastern BC and southwestern AB as *O. jutta reducta* McDunnough by Guppy and Shepard (2001). However, this is a case of misidentification; the taxon *reducta* (a full species) is restricted to the United States. The unique structural character of *O. reducta* was noted in the original description (McDunnough 1929a) and its significance was further explained by Kurentsov (1970) who first pointed out that the taxon *reducta* should be treated as a distinct species. The type locality of *chermocki* is Banff, AB.

1224 ***Oeneis melissa* ssp. *beanii*** – The relationships among taxa currently lumped under this name are not completely understood. The taxon *beanii* has been treated as a subspecies of *O. melissa* by most workers since dos Passos (1958), and that popular interpretation is used herein pending further research. However, Elwes and Edwards (1893), Barnes and McDunnough (1918b), Gross (1970), Kurentsov (1970), Lukhtanov (1987), and Lukhtanov and Eitschberger (2001) provided evidence that *beanii* is indeed distinct, and that may prove to be the more tenable hypothesis. A full review of the *Oeneis melissa* group is needed. The type locality of *beanii* is the vicinity of Lake Louise, AB (Kondla 1996).

1225 ***Oeneis bore* ssp. *edwardsi*** – Much uncertainty exists regarding the status of various populations traditionally placed under this name. Many workers, for example, Kurentsov (1970), Ferris (1986), and Tuzov (1997), have treated subspecies *edwardsi* with subspecies *taygete* Geyer as a distinct species. That arrangement may indeed be the more accurate interpretation, but the traditional arrangement is retained herein, following Pelham (2008) and pending further analysis. Bird et al. (1995) treated the taxon *edwardsi* as a subspecies of *taygete* Geyer, following dos Passos (1949). Layberry et al. (1998) treated all western North American populations as subspecies *hanburyi* Watkins.

1226 ***Oeneis chryxus*** – The type locality of *chryxus* is Rock Lake, AB (Shepard 1984).

1227a ***Oeneis calais* ssp. *caryi*** – The taxon *caryi* was described as a full species and McDunnough (1934) subsequently lumped it and the taxon *calais* as subspecies of *O. chryxus* (Doubleday) on the basis of "a study of male genitalia." The taxa *calais* and *caryi* have been treated thus by most workers since. However, no convincing evidence is available to support treatment of the taxon *caryi* as a subspecies of *O. chryxus*. On the basis of phenotypic, structural, biogeographical, and ecological differences as discussed by Scott et al. (2006), it is herein treated as a subspecies of the boreal Canadian species *O. calais*, distinct from the cordilleran species *O. chryxus*. The type locality of *caryi* is the vicinity of latitude 59° 54' N, longitude 111° 40' W, near the west side of the Slave River, AB, near the present settlement of Fitzgerald (Kondla 1995b).

1227b ***Oeneis calais* ssp. *altacordillera*** – This taxon may not be conspecific with *O. calais* but it is so listed herein pursuant to the original description, pending further research.

1228 ***Oeneis alberta* ssp. *alberta*** – Populations in the Peace River area are presently undescribed. The type locality of *alberta* is Fish Creek Provincial Park, Calgary, AB (Kondla 1996).

1230 ***Oeneis uhleri* ssp. *varuna*** – Populations in the Peace River area are presently undescribed.

1235 ***Ceranemota fasciata*** – Specimens of this species were collected in 2006 in Waterton Lakes National Park and were confirmed as *C. fasciata* via DNA barcoding by BCS. This species is otherwise known in western Canada from the Gulf Islands of BC.

1242 ***Dysstroma suspectata*** – AB material is referable to subspecies *mackieata* Cassino and Swett (type locality: Bilby, AB).

1243 ***Dysstroma infuscata*** – This Eurasian species is herein confirmed for the first time to be present in North America; it has been found in AB (Birch Mountains and Brown Creek near Nordegg) and in YT. It is very similar to and historically confused with *D. suspectata* (Möschler). The North American species of this group of *Dysstroma* species are being revised by BCS.

1244 ***Dysstroma truncata*** – AB material is referable to subspecies *traversata* (Kellicott).

1245 ***Dysstroma walkerata*** – Although McDunnough (1946a) treated both the boreal and cordilleran populations as forms of this "species," only the boreal form is referable to *D. walkerata*, which may prove to be a form of *D. truncata* (Hufnagel) (BCS, in preparation). The larger, darker taxon of the foothills and mountains is referable to the otherwise Eurasian species *D. pseudimmanata* (Heydemann); see note 1246 on that species.

1246 ***Dysstroma pseudimmanata*** – This Eurasian species is herein confirmed for the first time to be present in North America. It was previously treated as a larger, darker cordilleran form of *D. walkerata* (Pearsall). *Dysstroma pseudimmanata* occurs from eastern Siberia to AK, YT, BC, and western AB, and continuing south through the United States to CA (BCS, in preparation.)

1248 ***Dysstroma rutlandia*** – Type locality: Rutland, SK, near the AB–SK border. Few specimens are known.

1251 ***Eulithis gracilineata*** – Known in AB from single specimens in the Bowman collection from Calgary (specimen in the UASM) and from near Lloydminster (specimen in the CNC). *Eulithis gracilineata* was reported by Bowman (1951) and McGuffin (1958b) as *E. diversilineata* (Hübner), now considered to be a distinct species that is not known from AB. At the time, the taxon *gracilineata* was considered to be a form of *E. diversilineata* (McDunnough 1938c).

1254 ***Eulithis destinata*** – AB material is referable to subspecies *schistacea* (Warren). The type locality of *bowmani* Cassino and Swett, listed by Bowman (1951) as a subspecies of *E. destinata* but now considered to be a synonym, is Cadomin, AB.

1255 ***Eulithis flavibrunneata*** – Type locality: Lloydminster, AB.

1257 ***Eulithis xylina*** – AB material is referable to subspecies *speciosa* (Hulst), which was described from Calgary.

1258 ***Antepirrhoe semiatrata*** – Choi (2001) transferred the North American species of *Eustroma* to *Antepirrhoe*. Bowman's series of *E. semiatrata* contained an old specimen of *Lampropteryx suffumata* ([Denis and Schiffermüller]); see note 1266 on that species.

1261 ***Colostygia circumvallaria*** – North American populations have previously been assigned as a subspecies of the European *C. turbata* (Hübner), but North American and European species are not conspecific (see Appendix A9). The type locality for *circumvallaria* is Billings lumber mill, near Millarville, AB.

1263 ***Thera juniperata*** – This Eurasian species was introduced to North America and has recently become established in AB in the greater Edmonton area, where it was first recorded in 1995 near Sherwood Park (collected by GRP). It is now common in Edmonton and also present in Erskine (collected by C.D. Bird). Associated with ornamental juniper, the host plant.

1266 ***Lampropteryx suffumata*** – This species was documented only recently in North America, when Choi (2000) recorded it from AK. It has subsequently been discovered in BC and AB (deWaard et al. 2008). The oldest North American specimen is from Hillcrest, AB, collected by K. Bowman in 1919; it had been misidentified in the Bowman collection as *Eustroma [= Antepirrhoe] semiatrata* (Hulst).

1270 ***Hydriomena albimontanata*** – Prentice's (1963) record of *H. californiata* (Packard) in AB is referable to this species. Prentice also reported other AB specimens, correctly identified as *H. albimontanata*.

1276 ***Coryphista meadii*** – The specific epithet was misspelled as *meadi* in Bowman (1951).

1277 ***Rheumaptera undulata*** – AB material is referable to subspecies *bluff* (Bryk).

1278 ***Rheumaptera hastata*** – AB material is referable to subspecies *gothica* (Guenée). *Rheumaptera hastata* is a strictly diurnal species.

1279 ***Rheumaptera subhastata*** – There are several available subspecific names for North American populations, but it is currently unclear which, if any, best apply to AB populations. *Rheumaptera subhastata* is diurnal.

1280 ***Entephria multivagata*** – Bowman's (1951) record of *E. aurata* (Packard) is referable to *E. multivagata*.

1281 ***Entephria lagganata*** – Type locality : Laggan [= Lake Louise], AB.

1282 ***Entephria kidluitata*** – Known in AB from the Grande Cache area (Troubridge 1997), including Mount Stearn (collected by D. Lawrie).

1285 ***Spargania magnoliata*** – Populations in the mountains are subspecies *pernotata* (Hulst). Specimens from elsewhere in AB are paler and more crisply patterned than *pernotata* specimens; it is not known to what subspecies, if any, they belong.

1286 ***Spargania luctuata*** – AB material is referable to subspecies *obductata* (Möschler). Adults are diurnal.

1287 ***Perizoma basaliata*** – Reported by Bowman (1951) from the Edmonton area as *P. basaliata grandis* (Hulst). *Perizoma grandis* is a valid species that does not occur in the Edmonton area but does occur in southwestern AB; see note 1288 on that species.

1288 ***Perizoma grandis*** – This species was first recorded from Waterton Lakes National Park in 2005. The record of this taxon by Bowman (1951) (as *P. basaliata grandis*) is referable to nominate *P. basaliata* (Walker).

1294 ***Xanthorhoe packardata*** – This species was not reported by Bowman (1951), but his series of *X. labradorensis* (Packard) included specimens of *X. packardata*. The two species are superficially almost identical but can be separated by antennal characters (males only) and genitalic characters (both sexes).

1295 ***Xanthorhoe abrasaria*** – There are several available subspecific names for North American populations, but it is currently unclear which, if any, of these names are best applied to AB populations.

1297 ***Xanthorhoe macdunnoughi*** – Occurs throughout southern BC and along the western edge of the mountains in AB. A small series collected at Lake Louise, AB, on 28 July 1982 by J. D. Lafontaine (specimens in the CNC) is referable to this species, as is a single specimen collected in 2001 in the Crowsnest Pass by C.D. Bird. *Xanthorhoe macdunnoughi* cannot be reliably distinguished from *X. delectaria* Cassino and Swett or *X. lagganata* Swett and Cassino without dissecting the specimen or brushing the male valves.

1298 ***Xanthorhoe ramaria*** – This species was reported in error by Bowman (1951) as *X. ramaria reclivisata* Swett and Cassino. The specimens in the Bowman material are neither *X. ramaria* nor *X. reclivisata* but are referable to *X. delectaria* Cassino and Swett (see note 1299 on that species). *Xanthorhoe ramaria* is known in AB only from recent collections in the subarctic Caribou Mountains.

1299 ***Xanthorhoe delectaria*** – This taxon has previously been treated as a western mountain subspecies of *X. ramaria* Swett and Cassino. Herein we treat it as a separate species

(see entry A10 in the Appendix). Bowman's (1951) record of *X. ramaria reclivisata* Swett and Cassino is referable to *X. delectaria*.

1300 ***Xanthorhoe lagganata*** – This taxon was previously treated as a subspecies of *X. incursata* (Hübner) (see entry A11 in the Appendix). The type locality of *lagganata* is Laggan (now called Lake Louise), AB.

1301 ***Xanthorhoe reclivisata*** – The taxonomic status of this species is currently unclear; it is known only from the holotype, and the genitalic structure is unique. Specimens collected by Bowman and reported by him (Bowman 1951) as *X. ramaria reclivisata* were misidentified and are referable to *X. delectaria* Cassino and Swett. This group is being revised by BCS. The type locality is Laggan (now called Lake Louise), AB.

1302 ***Xanthorhoe algidata*** – The taxon *dodata* Cassino and Swett, previously treated as a distinct species, is herein synonymized with *X. algidata* (see entry A12 in the Appendix). *Xanthorhoe algidata* is very similar to *X. fossaria* Taylor, which is found only in the Rocky Mountains. Foothills specimens should be dissected to confirm identification.

1303 ***Xanthorhoe fossaria*** – Specimens reported from the Lac La Biche area by Pohl et al. (2004b) are referable to *X. algidata* (see note 1302 on that species).

1304 ***Xanthorhoe decoloraria*** – Previously known as *X. munitata* (Hübner). We follow Parsons et al. (1999) in treating the taxon *munitata* as a subspecies of the Holarctic species *X. decoloraria*. There are several available subspecific names for North American populations, but it is currently unclear which if any of these names best apply to AB populations. *Xanthorhoe decoloraria* is very closely related to *X. alticolata* Barnes and McDunnough, and it is difficult to separate the two species where they meet in AB. *Xanthorhoe decoloraria* is a smaller insect and occurs widely in AB east of the mountains in the grasslands, aspen parkland, and boreal forest. *Xanthorhoe alticolata* is larger and occurs in the YT, BC, and the mountains of southwestern AB. Differences in the genitalia of both sexes exist between these two species, but they tend to intergrade where they come into contact (e.g., the foothills and mountains in much of AB). Populations from approximately Nordegg and northward, including the alpine area on Pink Mountain, BC, appear to be typical *X. decoloraria,* whereas populations in the mountains from approximately Kananaskis and southward appear to be *X. alticolata*. Preliminary mtDNA barcode data show a significant separation of the Waterton Lakes National Park population from other AB material (there is a difference of approximately 1.5% in the mtDNA sequences of these two groups). Additional data from the mountains and foothills of AB north of Crowsnest Pass would be informative. The best solution at present may be to treat these two taxa as subspecies rather than species. However, pending further research, herein we treat AB populations from east of the mountains and from the foothills and mountains from Calgary northward as *X. decoloraria*, populations of the larger form in the mountains from Kananaskis southward as *X. alticolata*, and material from the intervening areas as intermediate.

1305 ***Xanthorhoe alticolata*** – Known in AB from recent material from Waterton Lakes National Park, and identified as *X. alticolata*, on the basis of both molecular (*cox1* barcode fragment) and morphological data. This species appears to intergrade with *X. decoloraria* in the mountains between Kananaskis and Nordegg; see note 1304 on *X. decoloraria* for details.

1306 ***Xanthorhoe ferrugata*** – There are several available subspecific names for North American populations of the Holarctic species *X. ferrugata*, but it is currently unclear which, if any, best apply to AB populations.

1310 ***Epirrhoe sperryi*** – Type locality: Lloydminster, SK. This species is strictly diurnal.

1311 ***Euphyia intermediata*** – Previously treated as a subspecies of the Palearctic species *E. unangulata* (Haworth), but we follow Parsons et al. (1999) in treating North American populations as a separate species.

1312 ***Zenophleps alpinata*** – Previous AB records of *Z. alpinata* and *Z. lignicolorata* (Packard) are all referable to *Z. alpinata*, as discussed in note E86 on *Z. lignicolorata* in the Excluded Taxa section.

1313 ***Psychophora* sp. nr. *suttoni*** – Rocky Mountain populations of this taxon represent an undescribed species, previously treated as *P. suttoni* Heinrich (Bowman 1951). The genus is being revised by BCS. This species may be biennial in AB, where it is known only from Nordegg, Lake Louise, and Willmore Wilderness Park. It probably also occurs further south in AB, as it is known from BC's Mount Assiniboine Provincial Park on the AB–BC border (collected by D. Nicholson). It is a diurnal arctic–alpine species.

1314 ***Orthonama obstipata*** – Populations from Africa, Europe, Asia, and North America are all currently considered to belong to a single species (type locality: Barbary coast, Africa), but this taxonomic arrangement is in need of review. The specific epithet was misspelled as *abstipata* in Bowman (1951).

1315 ***Orthonama evansi*** – Ferguson (1983) erroneously placed parentheses around the author's name.

1315.1 ***Orthonama centrostrigaria*** – Occurs in both SK and BC and may also occur in southern AB.

1315.2 ***Hydrelia inornata*** – Known from as far west as west-central SK (Big River; specimens in the NFRC) and may occur in adjacent areas of AB.

1318 ***Venusia comptaria*** – An eastern species reported herein for the first time from AB, this species was overlooked in the province as being *V. pearsalli* (Dyar). The latter species occurs in the mountains and foothills of the province west through BC, whereas *V. comptaria* is known from the boreal region near Edmonton and Lac La Biche. The records of *V. pearsalli* by Pohl et al. (2004b) are referable to this species, as are some of Bowman's (1951) records.

1319 ***Venusia pearsalli*** – Earlier reports of this species in AB include *V. comptaria* (Walker); see note 1318 on that species.

1321 ***Minoa murinata*** – This moth was introduced from Europe to control Leafy Spurge (*Euphorbia esula* L.; Euphorbiaceae) in AB and BC. It was released in Edmonton and at nine sites in southern AB between 1991 and 1994, but it appears not to have successfully established (McClay et al. 1995). The taxonomic placement of this species within the North American Asthenini is not known.

1323 ***Epirrita undulata*** – Type locality: High River, AB.

1324 ***Operophtera bruceata*** – A common pest of Trembling Aspen in AB, this species has localized, 2- to 3-year outbreaks, causing complete defoliation of the trees.

1327 ***Horisme incana*** – Type locality: Calgary, AB.

1328 ***Eupithecia ornata*** – Records of *E. monacheata* Cassino and Swett in Bowman (1951) are referable to *E. ornata*. *Eupithecia monacheata* is not known to occur in Canada.

1330 ***Eupithecia palpata*** – Bolte (1990) synonymized the taxon *transcanadata* MacKay under *E. palpata* after careful consideration. Parsons et al. (1999) treated the taxon *transcanadata* as a separate species but did not provide any rationale for doing so; therefore, we follow Bolte (1990).

1330.1 ***Eupithecia placidata*** – This species is known from the Rocky Mountains in BC, just across the AB border. It was reported from AB by CBIF (2003), but that record is considered erroneous as no AB specimens are known.

1333 ***Eupithecia niveifascia*** – This species is known in AB from several recent collections at Waterton Lakes National Park by GRP.

1334 ***Eupithecia bowmani*** – Type locality: Nordegg, AB.

1338 ***Eupithecia lafontaineata*** – Before Bolte's (1990) revision, this species had been identified in North America as *E. undata* Freyer, a Palaearctic species.

1341 ***Eupithecia mutata*** – See note 1342 on *E. columbrata*.

1342 ***Eupithecia columbrata*** – Bolte (1990) placed *E. columbrata* in synonymy with *E. mutata* Pearsall, as a subspecies. However, Parsons et al. (1999) treated *E. columbrata* as a full species, a decision that is supported by DNA barcode data (BCS, unpublished data). *Eupithecia columbrata* replaces the boreal species *E. mutata* in the mountain region. Bowman's (1951) record from "Zone 8" (Red Deer – Camrose) refers to *E. mutata* (his mountain records are correct).

1343 ***Eupithecia graefii*** – Known in AB only from recent collections at Waterton Lakes National Park by E. M. Pike, C. B. Christensen, and GRP.

1347 ***Eupithecia lariciata*** – Listed by Bowman (1951) as *E. luteata* Packard and *E. luteata bifasciata* (Dyar), both recently designated synonyms (Bolte 1990).

1348 ***Eupithecia sharronata*** – Known from the central and northern foothills (Bolte 1990) and recent collections in the subarctic Caribou Mountains (specimens in the UASM). AB and SK records of *E. fletcherata* Taylor in Prentice (1963) are also referable to *E. sharronata*.

1349 ***Eupithecia casloata*** – The specific epithet was misspelled as *kasloata* in Bowman (1951).

1350 ***Eupithecia annulata*** – Reported by Bowman (1951) under the names *filmata* Pearson and *usurpata* Pearson, both recently designated synonyms (Bolte (1990).

1355 ***Eupithecia satyrata*** – AB material is referable to subspecies *dodata* Taylor, type locality: the head of Pine Creek, near Calgary. It was also reported by Bowman (1951) under the name *terminata* Taylor, a recently designated synonym (Bolte 1990).

1356 ***Eupithecia absinthiata*** – This species was reported under the name *coagulata* Guenée by Bowman (1951), a recently designated synonym (Bolte 1990).

1357 ***Eupithecia nimbicolor*** – Type locality: Calgary, AB.

1359 ***Eupithecia behrensata*** – Recently collected in the Milk River basin in southeastern AB by GRP and GGA.

1361 ***Eupithecia russeliata*** – Known in AB only from the foothills and the Birch Mountains. The larvae feed on *Kalmia* spp. (Ericaceae).

1362 ***Eupithecia ammonata*** – Type locality: Red Deer River, 80 km northeast of Gleichen, AB.

1367 ***Eupithecia lachrymosa*** – Reported as *E. georgii* McDunnough by Bowman (1951) and as *E. kananaskata* MacKay by McGuffin (1958b) and Prentice (1963); both of these names are recently synonymized (Bolte 1990). The latter name was not included in the index of Bolte (1990) but was clearly reported under *E. lachrymosa* in the text.

1368 ***Eupithecia coloradensis*** – The only AB record is a recent collection from the Red Deer River valley near Bindloss by BCS.

1372 ***Carsia sororiata*** – The bright, well-marked populations in the mountains are subspecies *columbia* McDunnough, whereas the poorly marked, duskier specimens from Edmonton belong to the boreal–arctic subspecies *thaxteri* Swett. This species is diurnal.

1376 ***Lobophora nivigerata*** – This species was reported only from the Lloydminster region by Bowman (1951), but more specimens from other parts of the boreal region in AB were present in his collection, misidentified as *L. montanata* Packard (Lafontaine and Troubridge 1998). *Lobophora montanata* is not known to occur in AB; see entry E83 on that species in the Excluded Taxa section. See also note 1377 on *L. magnoliatoidata*.

1377 ***Lobophora magnoliatoidata*** – Bowman's (1951) records of *L. montanata* Packard from the Rocky Mountains are referable to this species. Bowman's non-mountain records are referable to *L. nivigerata* Walker (Lafontaine and Troubridge 1998). *Lobophora montanata* is not known to occur in AB; see entry E83 on that species in the Excluded Taxa section. A taxonomic review of the group is needed.

1378 ***Idaea occidentaria*** – Known in AB (and Canada) from a single specimen collected by J. A. Scott at Police Point in Medicine Hat in 2008.

1382 ***Scopula cacuminaria*** – Known in AB from a single specimen collected recently near Bow Island by GGA.

1386 ***Scopula junctaria*** – See note 1387 on *S. quinquelinearia*.

1387 ***Scopula quinquelinearia*** – This taxon was treated as a subspecies of *S. junctaria* (Walker) by Covell (1970); we revert to treating both taxa as full species on the basis of the fact that *S. junctaria* and *S. quinquelinearia* are sympatric in southwestern AB and have maintained their genetic identity according to *cox1* gene barcode sequences (see entry A13 in the Appendix).

1387.1 ***Scopula quadrilineata*** – An eastern species reported as far west as Waskesiu Lake in north-central SK by McGuffin (1967) (as *S. persimilis* (Hulst), a synonym); it may also occur in eastern AB.

1388 ***Scopula frigidaria*** – AB material is referable to the nominal subspecies.

1389 ***Scopula siccata*** – Known in AB only from Beaver Mines Lake (collected by E. M. Pike and G. J. Hilchie)

1391 ***Scopula luteolata*** – Known in AB only from the Crowsnest–Waterton region. Specimens originally reported as *Scopula* [= *Lobocleta*] *quaesitata* (Hulst) in AB and BC (McGuffin 1967) are referable to *S. luteolata*. For details see note E87 on *Lobocleta quaesitata* in the Excluded Taxa section.

1392 ***Scopula sentinaria*** – AB material belongs to the nominate subspecies. This taxon is strictly diurnal.

1393 ***Leptostales ferruminaria*** – Known in AB from a few scattered records from the grasslands region and disjunct populations in the AB Peace River grasslands. There are very few Canadian records for this small prairie moth.

1395 ***Nemoria darwiniata*** – Known in AB only from Waterton Lakes National Park (McGuffin 1988).

1396 ***Nemoria rubrifrontaria*** – Known in AB from a single specimen collected in 2002 in Colin–Cornwall Lakes Wildland Provincial Park on the Canadian Shield north of Lake Athabasca by D. A. Macaulay. Specimens reported as *N. rubrifrontaria* by Bowman (1951) were misidentified and have been redetermined as *Synchlora aerata* (Fabricius).

1398 ***Dichorda rectaria*** – Known in Canada from a single specimen from Milk River, AB collected by M. Conrad in 1979. The specimen is deposited in the Royal Saskatchewan Museum.

1399 ***Synchlora aerata*** – This species was misidentified by Bowman (1951) and reported as *Nemoria rubrifrontaria* (Packard). It is bivoltine in southern AB.

1400 ***Synchlora bistriaria*** – Transferred from *Cheteoscelis* to *Synchlora* by Parsons et al. (1999).

1401 ***Mesothea incertata*** – Many host plants in various families are listed in Handfield (1999), but in AB this species is associated only with ericaceous plants and is usually found associated with Common Bearberry (*Arctostaphylos uva-ursi* (L.) Spreng.; Ericaceae) and in open peatlands. Adults are strictly diurnal.

1402 ***Archiearis infans*** – Adults are strictly diurnal.

1403 ***Leucobrephos brephoides*** – Adults are strictly diurnal.

1404 ***Alsophila pometaria*** – Young (2006) provided strong evidence that *Alsophila* is a derived group within the Ennominae, so that is how we treat it herein.

1405 ***Nematocampa resistaria*** – Listed by Bowman (1951) and Prentice (1963) under the name *limbata* (Haworth), a recently designated synonym (Ferguson 1993). This genus was moved from the Ourapterygini to its current placement in the Cassymini by Ferguson (2008).

1406 ***Protitame virginalis*** – Reported by Bowman (1951) as "*P. hulstaria*" (a misspelling of *hulstiaria* (Taylor)). The taxon *hulstiaria* is a synonym of *P. virginalis* according to McGuffin (1972). This synonomy was apparently overlooked by Ferguson (1983).

1407 ***Protitame subalbaria*** – Treated historically as *P. matilda* (Dyar), a recently designated synonym (Ferguson 2008).

1408 ***Eumacaria madopata*** – Treated historically as *E. latiferrugata* (Walker), a recently designated synonym (Ferguson 2008).

1410 ***Speranza amboflava*** – Treated until recently (Ferguson 2008) as a subspecies of *S. sulphurea* (Packard). The type locality is Calgary, AB. This and other *Speranza* species have traditionally been placed in the genus *Itame*; the arrangement presented herein follows Ferguson (2008).

1411 ***Speranza boreata*** – AB populations previously treated as *S. anataria* (Swett) are referable to this species, which was described recently by Ferguson (2008). *Speranza anataria* does not occur in AB (see entry E99 in the Excluded Taxa section for details). The type locality of *boreata* is Nordegg, AB.

1413 ***Speranza coortaria*** – This species is known in AB from the Siegner Lake and David Lake dunes (collected by BCS and D. A. Macaulay) but is probably more widespread; it was also recorded from the Cypress Hills in SK (McGuffin 1972).

1415 ***Speranza decorata*** – Bowman's (1951) record of *S. denticulodes* (Hulst) is referable to *S. decorata*. *Speranza denticulodes* is not known to occur in Canada; see note E100 in the Excluded Taxa section.

1416 ***Speranza occiduaria*** – Bowman's (1951) listing of *S. flavicaria* (Packard) is referable to *S. occiduaria*. *Speranza flavicaria* is not known to occur in Canada; see note E101 in the Excluded Taxa section. Furthermore, we treat the taxon *andersoni* (Swett), previously considered to be a separate species, as a color form of *S. occiduaria* (see entry A15 in the Appendix). Bowman (1951) treated *andersoni* as a subspecies of *Itame* [= *Speranza*] *occiduaria*, following McDunnough (1938c). Ferguson (2008) treated the taxa *andersoni* and *occiduaria* as separate species.

1417 ***Speranza helena*** – Known in AB (and Canada) from a specimen collected at Pakowki dunes in 2008 by GGA.

1419 ***Speranza quadrilinearia*** – Known in AB (and Canada) from a specimen collected at Pakowki dunes in 2008 by GGA.

1421 ***Speranza loricaria*** – Syntypes of the synonym *julia* (Hulst) are from Calgary, AB.

1422 ***Speranza plumosata*** – Known in AB only from recent collections in Waterton Lakes National Park.

1423 ***Epelis truncataria*** – Ferguson (1983, 2008) assigned this species to the monotypic genus *Epelis*; it has been placed by various other authors into *Isturgia* or *Macaria*.

1424 ***Macaria notata*** – Previously treated under the name *ulsterata* (Pearsall), a recently designated synonym of this Holarctic species (Ferguson 2008). This and other *Macaria* species have been traditionally placed in the genus *Semiothisa*; the arrangement presented herein follows Ferguson (2008).

1426 ***Macaria masquerata*** – Recently described by Ferguson (2008) for northern populations previously treated under the name *M. bicolorata* (Fabricius).

1427 ***Macaria adonis*** – A specimen from the Shigematsu collection (now housed at the UASM) is labeled "Raymond [near Lethbridge], 18 July 1968, S. S. Shigematsu, collector." This is a western forest species, previously known from southern BC south to CA, which feeds on Ponderosa Pine and Lodgepole Pine and flies in April and May in BC. There is a distinct possibility that this specimen is either mislabeled (as suggested by the unusual date) or a stray. However, the species may indeed be established among ornamental pine trees on the southern AB prairies.

1428 ***Macaria sexmaculata*** – Most AB material is referable to the nominal subspecies. Subspecies *incolorata* Dyar occurs in the southern mountains of AB. Ferguson (1974) noted structural differences in the male antennae between the taxa *incolorata* and *sexmaculata*, which suggests these are separate species. More material is needed from the southern foothills region in AB where the two taxa should meet. *Macaria sexmaculata* may be double-brooded in AB.

1429 ***Macaria signaria*** – AB material has been referred to as subspecies *dispuncta* (Walker), but Ferguson (2008) treated this as merely a form. This species has been plagued by taxonomic problems, and it was reported under the names *M. marmorata* (Ferguson) (= *banksianae* (Ferguson)), *M. unipunctaria* (Wright), and *M. submarmorata* Walker by Ferguson (2008). Other references to this species include records of *M. granitata* Guenée. Bowman (1951) reported it as *Semiothisa* [= *Macaria*] *granitata*. Prentice (1963) reported it as "*Semiothisa* [= *Macaria*] spp. (*granitata* group)." Ferguson (1972b) considered *M. marmorata* as distinct from both *M. granitata* and *M. unipunctaria*. Ferguson (1974) proposed the name *banksianae* to replace his earlier name *marmorata* Ferguson, 1972, at the time a secondary homonym of *Semiothisa marmorata* (Warren, 1897) (type locality: Africa). Parsons et al. (1999) reinstated Ferguson's older name as *Macaria marmorata*. Herein we designate *unipunctaria*, *marmorata*, and *submarmorata* as synonyms of *M. signaria* (see entry A14 in the Appendix for details).

1431 ***Digrammia californiaria*** – On the basis of the long reported flight period, it appears that this species may be double-brooded in AB. This and other *Digrammia* species have been traditionally placed in the genus *Semiothisa*; the arrangement presented herein follows Ferguson (2008).

1432 ***Digrammia delectata*** – Recently discovered in AB near Jasper by J. J. Dombroskie in 2006.

1434.1 ***Digrammia triviata*** – This species occurs in the extreme southeast of BC (McGuffin 1972) and may be found in southwestern AB. It appears to have two broods in BC.

1435 ***Digrammia setonana*** – Misidentified by Bowman (1951) as *D. continuata* (Walker). *Digrammia continuata* is not known to occur in western Canada; see note E89 in the Excluded Taxa section.

1436 ***Digrammia rippertaria*** – Previously known as *Semiothisa* (= *Digrammia*) *hebetata* (Hulst), now considered a synonym of the Holarctic species *D. rippertaria* (Parsons et al. 1999). AB material is referable to the nominate subspecies.

1437 ***Digrammia decorata*** – Prior to its removal from the genus *Semiothisa*, the name *decorata* was preoccupied by *S. decorata* (Warren), so the valid name for this entity was *S. arubrescens* McDunnough. McGuffin (1972) and Ferguson (2008) treated *arubrescens* as a subspecies of *decorata*; Parsons et al. (1999) listed it as a synonym.

1439 ***Digrammia subminiata*** – This variable species was reported by Bowman (1951) under the names *snoviata* (Packard) and *meadiaria* (Packard), which are now both considered to be junior subjective synonyms of *D. subminiata*. This conclusion was reported in McGuffin (1972) but remained unofficial until after the publication of Ferguson (1983). On the basis of the lengthy flight period reported in AB, it appears that this species may have two broods.

1441 ***Digrammia irrorata*** – The only AB records are a number of recent collections from the southern grasslands.

1442 ***Fernaldella fimetaria*** – Known in AB only from Lost River, Dinosaur Provincial Park, and Lethbridge.

1444 ***Orthofidonia tinctaria*** – AB material has been reported as both *O. tinctaria*, by Bowman (1951), and *O. exornata* (Walker), by McGuffin (1977) and Pohl et al. (2004b). On the basis of a number of dissections of AB specimens of both sexes as well as DNA barcode sequence data, we conclude that all AB *Orthofidonia* populations are *O. tinctaria*.

1446 ***Neoalcis californiaria*** – This conifer-feeding species is normally found from southern BC southward (McGuffin 1977). There is a recent and rather unusual AB record from Taber Provincial Park collected by E. M. Pike, possibly a mislabeled or accidentally introduced specimen.

1447 ***Ematurga amitaria*** – Larvae feed on Ericaceae and can be pests in commercial cranberry crops in eastern North America (Covell 1984). Adults are diurnal.

1450.1 ***Iridopsis vellivolata*** – Recorded from central Canada as far west as west-central SK; larvae feed primarily on pines (McGuffin 1977).

1452 ***Iridopsis humaria*** – Known in AB only from Fort McMurray.

1453 ***Iridopsis larvaria*** – Reported by Bowman (1951) as both *I. larvaria* and *I. emasculata* (Dyar), the latter a synonym of *larvaria* (McGuffin 1977).

1455 ***Ectropis crepuscularia*** – North American taxa of this nominal species are in need of revision. In AB, two species are included under this name: a widespread, boreo-montane species that flies in early spring, and a slightly smaller, tan-gray species with less pointed forewings that flies later in spring in riparian woods in the southern grasslands region. These two species exhibit divergent mtDNA lineages (barcode fragment of the *cox1* gene), both of which are distinct from that of typical European *E. crepuscularia*.

1457.1 ***Melanolophia signataria*** – This species occurs in central Canada west to east-central SK (McGuffin 1977); it may occur in eastern AB.

1458 ***Eufidonia convergaria*** – Records by Bowman (1951) and Prentice (1963) of *E. notataria* (Walker) are referable to *E. convergaria*, which was formerly treated as a subspecies of *E. notataria*. *Eufidonia notataria* is not known to occur in AB.

1460 ***Biston betularia*** – AB material is currently referable to subspecies *cognataria* (Guenée). The North American taxon *cognataria* has been treated variously as a species (e.g., by Bowman 1951) or as a subspecies separate from the Eurasian *B. betularia*. Although most recent literature treats *betularia* as a single Holarctic taxon, mtDNA data sug-

gest that the European and North American populations are different species and that more than one species may be present in AB (BCS, unpublished data).

1465 ***Phigalia titea*** – This species is known in AB from Medicine Hat, collected annually by J. A. Scott since 2006. It is otherwise known in eastern Canada and as far west as SK (Rindge 1975).

1467 ***Erannis tiliaria*** – Although McGuffin (1977) stated that the taxon *vancouverensis* Hulst (treated as a subspecies of *E. tiliaria* by Rindge (1975)) is sympatric with *E. tiliaria* in the central part of AB, nominate *vancouverensis* does not occur in AB. McGuffin's records of *vancouverensis* are based on his examination of specimens in the Bowman collection (McGuffin 1977). *Erannis* specimens from the Edmonton area show variation in wing markings, from typical light "*tiliaria*" forms to dark "*vancouverensis*" forms. We consider these variations to indicate variants of a single taxon rather than to be evidence of two sibling taxa. This interesting situation needs further study, particularly in the foothills–mountain region where the western and boreal forms should meet. *Erannis tiliaria* is an occasional localized pest on Trembling Aspen in the AB parklands.

1468 ***Lomographa semiclarata*** – Adults are strictly diurnal.

1469 ***Lomographa vestaliata*** – Known in AB only from a single collection from Seebe.

1471 ***Cabera exanthemata*** – AB material is referable to subspecies *bryantaria* (Taylor).

1474 ***Cabera borealis*** – Type locality: Calgary, AB.

1476 ***Drepanulatrix carnearia*** – Known in AB only from a recent collection at Beaver Mines Lake by E. M. Pike.

1477 ***Drepanulatrix falcataria*** – Known in AB from the Waterton Lakes National Park area and the Crowsnest Pass area.

1479 ***Ixala desperaria*** – Known in AB only from recent collections in Waterton Lakes National Park by GGA and BCS.

1480 ***Aspitates aberrata*** – The genus name is spelled *Aspilates* Treitschke in some works; we consider this to be an unnecessary emendation of *Aspitates* and therefore a junior synonym. Adults are primarily diurnal but occasionally are attracted to lights.

1481 ***Aspitates taylori*** – Restricted to open spruce bogs in the central and northern boreal region. Adults are diurnal.

1482 ***Euchlaena obtusaria*** – Handfield (1999) stated that *E. obtusaria* does not occur in QC; this suggests that our boreal records may also be referable to another species, possibly *E. muzaria* (Walker) or *E. effecta* (Walker).

1484 ***Euchlaena madusaria*** – AB material is referable to subspecies *ochrearia* McDunnough (type locality: Waterton Lakes).

1485 ***Euchlaena marginaria*** – Listed by Bowman (1951) as subspecies *albertanensis* Swett, now considered to be a synonym of *E. marginaria*.

1486.1 ***Euchlaena irraria*** – Occurs in central Canada west to central SK (McGuffin 1987) and may occur in east-central AB.

1489 ***Pero honestaria*** – Prentice's (1963) records of *P. ancetaria* (Hübner) (as *P. marmoratus* (Grossbeck), a synonym) are referable to *P. honestaria*. *Pero ancetaria* does not occur in AB; see note E98 in the Excluded Taxa section.

1490.1 ***Pero mizon*** – This species is present in eastern BC (McGuffin 1987) and may occur in the mountains of southwestern AB.

1493 ***Phaeoura quernaria*** – Known in AB from a single recent collection from the Wainwright Dunes Ecological Reserve by GGA and D. A. Macaulay.

1493.1 ***Gabriola dyari*** – Occurs in southeastern BC and will probably be found in adjacent areas of AB in association with its larval host, Douglas-fir.

1493.2 ***Animomyia hardwicki*** – This species is known only from the holotype male, collected on the southern edge of the Great Sand Hills of SK. It may also occur in sandy habitats in adjacent southeastern AB. This species was accidentally omitted by McGuffin (1981) in his treatment of the Canadian Ennominae fauna.

1496 ***Ennomos subsignaria*** – Recorded in AB only from Medicine Hat (Bowman 1951).

1497 ***Spodolepis substriataria*** – Reported as subspecies *danbyi* (Hulst) by Bowman (1951), Prentice (1963), and McGuffin (1981); it is now considered to be a full species (see entry A16 in the Appendix and see note 1498 on *S. danbyi*). Bowman and McGuffin clearly referred to some boreal specimens that are true *S. substriataria*; however, Prentice's (1963) records of *S. substriataria* are all from the cordilleran region and thus are all referable to *S. danbyi*.

1498 ***Spodolepis danbyi*** – Previously treated as a synonym of *S. substriataria* Hulst (see entry A16 in the Appendix). This taxon was treated as a subspecies of *S. substriataria* by Bowman (1951) and Prentice (1963) and as a variety by McGuffin (1981).

1499 ***Tacparia detersata*** – McGuffin (1987) repeated Ferguson's (1973) AB record, which stated "NS to AB" without details. Specimens may exist in the AMNH, but for now the species is considered unconfirmed for AB.

1500 ***Thallophaga hyperborea*** – Known in AB from a single collection at Window Mountain Lake in the Crowsnest Pass by E. M. Pike.

1505 ***Metarranthis warneri*** – The correct spelling of the specific epithet is *warneri*, not *warnerae* (Parsons et al. 1999).

1506.1 ***Metarranthis hypocharia*** – This species is known from central Canada as far west as west-central SK (Big River) and may occur in adjacent areas of AB. The specific epithet was misspelled "*hypochraria*" in Parsons et al. (1999).

1507 ***Probole alienaria*** – This taxon was treated as a synonym of *P. amicaria* (Herrich-Schäffer) by McGuffin (1987), although some authors treat it as a full species (e.g., Ferguson 1983; Handfield 1999). According to Handfield (1999), *P. alienaria* is a generalist feeder on deciduous shrubs whereas *P. amicaria* feeds only on species of dogwood (*Cornus* spp.; Cornaceae). Examination of reared AB specimens in the NFRC supports this distinction: all *P. amicaria* phenotypes were reared from *Cornus* spp., whereas *P. alienaria* were reared from a variety of deciduous hosts, including *Cornus* spp. However, molecular data do not support a two-species interpretation, and revisionary work by Tomon (2007) shows that significant phenotypic variation occurs among brood siblings. The differences in the male antennal structure in some populations in eastern North America (Handfield 1999) warrant a closer look, and we maintain these taxa as separate species, as proposed by Ferguson (1983), pending publication of revisionary work.

1508 ***Probole amicaria*** – See note 1507 on *P. alienaria*.

1509 ***Plagodis pulveraria*** – AB material is referable to subspecies *occiduaria* (Walker), previously listed as a full species in the genus *Anagoga*. We follow Parsons et al (1999) in placing this species in *Plagodis*.

1509.1 ***Plagodis serinaria*** – This species occurs in central Canada west to north-central SK and may occur in east-central AB.

1516 ***Meris patula*** – Paratype specimens in the CNC are from 14 km north of Coaldale, AB. These are the only known Canadian specimens of this moth, which is rare globally.

1517 ***Besma quercivoraria*** – AB records of *B. endropiaria* (Grote and Robinson) are all referable to *B. quercivoraria*; see note E88 on *B. endropiaria* in the Excluded Species section.

1518 ***Lambdina fiscellaria*** – AB material is referable to subspecies *lugubrosa* (Hulst). Populations from western and eastern North America exhibit distinct mtDNA lineages but are best treated as subspecies of *L. fiscellaria* rather than separate species (Sperling et al. 1999).

1521 ***Nepytia freemani*** – The report of *N. umbrosaria* (Packard) in AB by Ives and Wong (1988; as *N. umbrosaria nigrovenaria* (Packard)) is probably based on misidentified larvae of *N. freemani.*

1524 ***Tetracis jubararia*** – This species is closely related to and may be conspecifc with *T. pallulata* Hulst. The specimen on which McGuffin (1987) based his AB record of *T. pallulata* is actually *T. jubararia* (specimen in the CNC); see note 1525 on *T. pallulata* for details. More work is needed on the taxonomy of these species (Ferris and Schmidt 2010). A third, closely related species with bipectinate male antennae occurs in the Okanagan region of BC and was overlooked by McGuffin (1987); that species is not currently known from AB (Ferris and Schmidt 2010). McGuffin (1987) misspelled *jubararia* as "*jubraria*". This and other AB species previously in *Synaxis* were moved to *Tetracis* by Ferris and Schmidt (2010).

1525 ***Tetracis pallulata*** – McGuffin (1987) did not specifically mention AB records of this species, but his range map (his fig. 22) indicates a record from the Crowsnest Pass on the AB-BC border. That record is based on a specimen in the CNC that is clearly labeled as being from AB. However, it is a misidentified *T. jubararia*. True *T. pallulata* has only recently been discovered in AB, during recent re-examination of *Tetracis* specimens by C. D. Ferris and BCS, which revealed a specimen of *T. pallulata* from AB in the UASM, that was previously identified as *T. jubararia*; it was collected in Waterton Lakes National Park on 31 August 2005 by GGA. This and other AB species previously in *Synaxis* were moved to *Tetracis* by Ferris and Schmidt (2010).

1526 ***Tetracis cervinaria*** – First recorded for AB in 2006 from Waterton Lakes National Park (collected by BCS). This species was moved from *Synaxis* by Ferris and Schmidt (2010).

1527 ***Tetracis formosa*** – Known in AB from a single specimen collected recently in the Red Deer River badlands at Dinosaur Provincial Park. This species was moved from *Synaxis* by Ferris and Schmidt (2010).

1529.1 ***Eutrapela clemataria*** – Known from central Canada west to east-central SK (McGuffin 1987) and may occur in eastern AB.

1530 ***Prochoerodes forficaria*** – Known in AB only in the mountains south of the Crowsnest Pass.

1531 ***Prochoerodes lineola*** – This is a replacement name for *P. transversata* (Drury, 1770), a junior primary homonym of *Phalaena transversata* Hufnagel, 1767 (Parsons et al. 1999).

1534 ***Tolype dayi*** – Discovered in 2005 in AB at Waterton Lakes National Park (collected in 2005 and 2006 by GGA and BCS).

1535 ***Tolype laricis*** – A single collection was reported by Prentice (1963) from the Drayton Valley area. We have been unable to locate a specimen to confirm this record, and we treat *T. laricis* as an unconfirmed species in AB. Ives and Wong (1988) repeated Prentice's (1963) record.

1537 ***Malacosoma disstria*** – This species, known as the Forest Tent Caterpillar, is the most important pest of Trembling Aspen and Balsam Poplar in the prairie provinces. It regularly defoliates large tracts of forest in AB, causing loss of growth and even mortality in

prolonged outbreaks, which can last up to 6 years. Outbreaks are eventually stopped by parasitoid buildups or inclement spring weather.

1538 ***Malacosoma californica*** – In AB, subspecies *lutescens* (Neumoegen and Dyar) occurs in the mountains and subspecies *pluviale* (Dyar) occurs in the boreal and foothills areas. Stehr and Cook (1968) synonomized the taxon *pluviale* under *M. californica*, but Franclemont (1973) questioned this, suggesting there were enough differences to warrant separate species status for this taxon, and preliminary molecular analysis supports this notion (BCS, unpublished data). Fieldwork where the ranges abut or overlap in AB could help resolve this issue. The status of bog populations of *M. californica* in the foothills that feed on Bog Birch (*Betula glandulosa* Michx.; Betulaceae) (Stehr and Cook 1968) present another puzzle awaiting resolution.

1539 ***Hemileuca nevadensis*** – First discovered in AB in 2001 after some ecological investigation by BCS and GGA. This species is diurnal and has been found in AB only among stunted stands of Trembling Aspen in the Edgerton–Dilberry sand dunes.

1540 ***Hemileuca hera*** – Known in AB from two specimens, one collected by GGA near Manyberries in 2008 (specimen in the UASM) and the other collected at Dinosaur Provincial Park (specimen in the CNC). Larvae feed on Sagebrush (*Artemisia cana* Pursh; Compositae) in southern SK (R. Hooper, personal communication) and can be relatively conspicuous. Adults are strictly diurnal.

1541 ***Hemileuca eglanterina*** – Adults are strictly diurnal.

1542.1 ***Actias luna*** – Occurs in central Canada as far west as Big River, SK (specimen in NFRC). There are also unconfirmed sightings from the area around Fort McMurray, AB; this species may indeed be present in east-central AB.

1543 ***Hyalophora cecropia*** – This species has not been recorded in AB since 1967, before which it was common in the grassland and southern parkland regions, feeding on Manitoba Maple shelterbelts to the point of achieving pest status. *Hyalophora cecropia* may no longer occur in the province. The species was certainly introduced to southern shelterbelts, but it is also possible that native populations existed (and may still exist) in native stands of Manitoba Maple along the South Saskatchewan River in the extreme east of AB. Bowman (1951) reported it also from the Peace River region, but we consider that record to be an error based on a misidentified *H. gloveri* (Strecker), which does occur there (see entry A17 in the Appendix).

1544 ***Hyalophora gloveri*** – This taxon has most recently been treated as a subspecies of *H. columbia* (Smith) (Tuskes et al. 1996), but we treat *H. gloveri* as a separate species for reasons presented in entry A17 in the Appendix. This species was listed by Bowman (1951) as both *Platysamia gloveri* and *P. columbia nokomis* (Brodie). *Hyalophora columbia* does not occur in AB.

1544.1 ***Manduca quinquemaculata*** – This species may occur as an occasional migrant into southern AB, as it does in both BC (Jones 1951) and SK (Hooper 1987, 2001).

1545 ***Ceratomia amyntor*** – This species is known in AB from recent records in the Red Deer River valley near Jenner in 2005 (collected by BCS; reported by Tuttle (2007) but not indicated in the range map) and Drumheller (larva photographed by B. and S. Krull) and several specimens from Medicine Hat (collected by J. A. Scott and E. M. Pike).

1548.1 ***Sphinx perelegans*** – Occurs throughout southern BC and may occur in southwestern AB.

1548.2 ***Sphinx gordius*** – Found in eastern Canada west to Saskatoon, SK (Riotte 1980) and may occur in association with *Prunus* species (Rosaceae) in east-central AB. Historical records of *S. gordius* in AB (Bowman 1951; McGugan 1958; Ives and Wong 1988) are

referrable to *S. poecila* Stephens, on the basis of a previous taxonomic arrangement (as recently as Hodges 1971), when *S. gordius* was treated as a synonym of *S. poecila* rather than a separate species.

1549 ***Sphinx poecila*** – See note 1548.2 on *S. gordius*.

1552 ***Lapara bombycoides*** – Known in AB only from northeastern AB, at Bitumount (collected by D. A. Macaulay) and Marguerite Crag and Tail Wildland Provincial Park (collected by BCS). It is probably more widespread in the eastern boreal portion of the province, in association with Jack Pine.

1554 ***Smerinthus cerisyi*** – See note 1555 on *S. ophthalmica*, and entry A18 in the Appendix.

1555 ***Smerinthus ophthalmica*** – As first suggested by Dod (1912), the western populations usually treated as *S. cerisyi* Kirby are referable to *S. ophthalmica*, a species herein recognized as distinct from the boreal species *S. cerisyi* (see entry A18 in the Appendix).

1558 ***Pachysphinx modesta*** – See note 1559 on *P. occidentalis*.

1559 ***Pachysphinx occidentalis*** – Southern prairie populations previously assigned to *P. modesta* (Harris) appear to be a distinct species, on the basis of both phenotypic and genetic differences. Although it is not certain that the correct name for this taxon is *occidentalis*, we use this as a name of convenience to refer to the larger, paler prairie taxon until this interesting question is resolved.

1561 ***Hemaris gracilis*** – Known in AB from four widely spaced recent collections in the eastern half of the province. This species is associated with Ericaceae.

1562 ***Hemaris diffinis*** – See note 1563 on *H. thetis*.

1563 ***Hemaris thetis*** – Two species occur in AB that have previously gone under the name *diffinis* (Boisduval): one in the foothills and mountains and the other in the prairie and parkland regions, with the prairie species referable to *H. diffinis* and the mountain–foothills species referable to *H. thetis* (Schmidt 2009a). Tuttle (2007) treated this species under the name *senta* (Strecker), a name synonymized under *H. thetis* by Schmidt (2009a).

1564 ***Amphion floridensis*** – A rare stray from the south, known in AB from a single specimen from High River collected on 1 June 1925.

1566 ***Proserpinus clarkiae*** – Reported for AB by Hodges (1971) without details, and no voucher specimens have been located. Tuttle (2007) was also unable to locate AB vouchers, and the status of this species in AB remains unconfirmed. This species is known from southern BC; if it occurs in AB it would probably be in the southwestern mountains.

1568 ***Darapsa choerilus*** – This is a new name for *D. pholus* (described as *Sphinx pholus* Cramer, 1776), a junior primary homonym of *Sphinx pholus* Drury, 1773 (currently *Lycomorpha pholus*; Arctiinae). The next available name for this species is *choerilus* (Kitching and Cadiou 2000). *Darapsa choerilus* was not listed by Bowman (1951), but it is relatively common and widespread in the northern boreal forest region.

1569 ***Hyles euphorbiae*** – Introduced from Europe as a biological control agent for Leafy Spurge (*Euphorbia esula* L. (Euphorbiaceae). *Hyles euphoriae* was first released at Cardston, AB, in 1978 as well as at other localities in SK, BC, and MT (Harris 1984). It is now well established in southern AB and is spreading northward. It was first recorded (as larvae) from Edmonton in 1998. It produces at least a partial second brood in southern AB.

1570 ***Hyles gallii*** – Some authors (e.g., Danner et al. 1998) treated the North American populations of this Holarctic species as subspecies *intermedia* (Kirby). Kitching and Cadiou (2000) did not recognize *intermedia* as a distinct subspecies, on the basis of

overlap in wing phenotype variation between nominate European and Nearctic populations.

1571 ***Hyles lineata*** – Specimens collected in spring (May–June) are immigrants from the south, whereas specimens collected later in the year (July–September) are probably offspring of these immigrants. *Hyles lineata* appears to be incapable of overwintering in AB.

1579 ***Notodonta torva*** – This species was previously treated as *N. simplaria* Graef. Schintlmeister (1983) relegated *simplaria* (misspelled as "*simpliaria*" therein and in Schintlmeister (2008)) as a subspecies of the widespread Eurasian species *N. torva*, on the basis of similarity of male genitalic structure. North American *N. torva simplaria* occurs north to at least west-central NT and northern YT, so it is quite plausible that a single species occurs across the northern hemisphere. We also note, however, that few taiga species are truly Holarctic (Mikkola et al. 1991) and that this taxonomic arrangement should be carefully reexamined.

1580 ***Gluphisia septentrionis*** – Schintlmeister (1983) considered this taxon to be a synonym of the widespread Eurasian species *G. crenata* (Esper), on the basis of similarity of male genitalic structure. *Gluphisia septentrionis* was re-instated as a valid species by Lafontaine and Schmidt (in press). See also note 1579 on *Notodonta torva*.

1584 ***Furcula cinerea*** – Two "forms" of this nominal species occur in AB: the typical eastern boreal form with a gray, washed-out forewing (Lloydminster records) and a slightly larger taxon with very pale whitish forewings that is found in the grasslands. Preliminary molecular data (BCS, unpublished data) indicate that these are probably not a single species. This situation needs further study.

1585 ***Furcula occidentalis*** – Populations in the foothills and mountains are larger and darker than specimens from the boreal forest and parklands and are referable to subspecies *gigans* (McDunnough). Specimens from the boreal forest and parklands are referable to the nominate subspecies. Both of these taxa may deserve species status, particularly in light of genetic divergences in the barcode fragment of the *cox1* gene. *Furcula occidentalis* was synonymized with *F. furcula* (Clerck) by Schintlmeister (2008) but is reinstated as a full species herein (see entry A20 in the Appendix).

1586 ***Furcula scolopendrina*** – Populations in the boreal forest and mountain regions are larger, darker and more completely banded than specimens from the wooded parts of the grasslands region. Further study is needed.

1588 ***Cerura scitiscripta*** – Known in AB from a single specimen collected at "Sunnydale," near Lloydminster, on 7 July 1947 by P. Bruggemann. The specimen is referable to subspecies *multiscripta* Riley.

1588.1 ***Datana ministra*** – Known from both southern BC and southern SK and probably occurs in southern AB.

1589.1 ***Heterocampa guttivitta*** – This species occurs in central Canada west to SK (Hooper 1988a) and may occur in east-central AB. It is polyphagous on deciduous trees.

1590 ***Schizura ipomoeae*** – Known in AB from recent collections in east-central AB.

1591.1 ***Schizura concinna*** – Occurs in both SK and BC and probably occurs in southern AB.

1594 ***Oligocentria pallida*** – Known in AB only from recent collections from the mountains south of the Crowsnest Pass.

1595 ***Dasylophia anguina*** – Collection data suggest that there is more than one brood in AB.

1596 ***Lymantria dispar*** – This Eurasian species was accidentally released in MA in 1869 by an entrepeneurial entomologist looking to develop a silk industry in North America.

It quickly spread across eastern North America and is now a serious pest of broadleaf trees. It is occasionally intercepted in the prairie provinces in pheromone traps and occasionally on nursery stock from areas where this species is established. It probably travels in egg masses or cocoons on vehicles. It is currently not established in AB (Brandt 1994), but single specimens have been collected in recent years at Sherwood Park, Edmonton, and Banff National Park (specimens in the NFRC), all considered to be unestablished introductions.

1597 ***Leucoma salicis*** – This introduced European species was first detected in North America in 1920 in MA and BC. It was first documented in AB in 1994 (Saunders 1996). Localized defoliation of poplars first occurred in Edmonton and St. Albert that year, and the species may have been present as early as 1991 (Hiratsuka et al. 1995). It still occasionally defoliates poplars in the Edmonton area, particularly hybrid and ornamental varieties. It occurs occasionally in the surrounding area (Wagner Natural Area, Cooking Lake, Rolly View). It has also been collected in the Red Deer River valley west of Sundre in 1996 by D. Lawrie, near Cadomin in 2000 by GGA and BCS, at Rock Lake near Jasper in 2000 by D. A. Macaulay and S. Dunne, and at Waterton Lakes National Park in 2007 by GRP. The lack of records beween the foothills and the Edmonton region suggests that the Edmonton population may have been a separate introduction from the foothills populations, which appear to be dispersing eastward naturally from adjacent areas of BC.

1598 ***Gynaephora rossii*** – This species of arctic, subarctic, and alpine habitats was reported by Bowman (1951; the specific epithet was misspelled as *rossi*) from the Red Deer area. The larvae were found on Balsam Poplar in 1902 by P. Gregson and were reported to be "almost abundant" in the following year (Dod 1906a). This is a very peculiar record for this species, because it is an arctic–alpine species and is not known from the Rocky Mountains south of Pink Mountain., BC (except for disjunct populations in CO and WY). Females of this species are able to fly, and it is possible the Red Deer record represented a temporary colony established by one or more females displaced over long distances by a weather front, a phenomenon that has been documented in *Malacosoma disstria* (Hübner) (Brown 1965). Larvae of *G. rossii* were discovered recently in the subarctic Caribou Mountains of northern AB by D. A. Macaulay, and at least one female was reared to adulthood (Schmidt et al. 2004).

1599 ***Dasychira dorsipennata*** – The AB record of *D. dorsipennata* is based on two female specimens from Medicine Hat collected by K. Bowman in June 1943. In his checklist, Bowman (1951) reported both *Olene atomaria* (Walker) (a synonym of *D. dorsipennata*) and *O. atomaria parallela* (Grote and Robinson) (a synonym of *D. obliquata* (Grote and Robinson)) from the Medicine Hat area. These specimens are probably referable to *D. dorsipennata* but are of uncertain identity because the female genitalic structures are not diagnostic in most members of this genus (Ferguson 1978). The nearest confirmed Canadian records of *D. dorsipennata* are from southeastern SK. No vouchers are known of *D. obliquata* west of MB.

1600 ***Dasychira vagans*** – AB material is referable to subspecies *grisea* (Barnes and McDunnough).

1601 ***Dasychira plagiata*** – We are unable to reliably separate the two conifer-feeding species of *Dasychira* (*D. plagiata* and *D. grisefacta* (Dyar)) where they occur in central AB. Specimens from the Jack Pine belt in the eastern boreal forest region we treat as *D. plagiata*, and those from the Lodgepole Pine regions in the mountains and upper foot-

hills we treat as *D. grisefacta*. Specimens from intermediate areas may be either species. Particularly problematic are the records for Medicine Hat and the Cypress Hills. Two specimens in the PMAE from Medicine Hat appear to have been reared (both very fresh and one very stunted) and may have been introduced as there are no native conifers in the area. Specimens from the Cypress Hills were treated by Prentice (1962) as *D. plagiata*, although the area is noted for its western elements (e.g., *Panthea virginarius* (Grote); three species of *Euphydryas*). Ferguson (1978) was unable to define the western limits for *D. plagiata* in Canada owing to the difficulty in separating it from *D. grisefacta* and stated that although Prentice (1962) may well have been correct in showing *D. plagiata* as occurring in SK and AB, he himself had definite records only west to MB. Conifer-feeding species found in the Jack Pine belt of AB, which continues uninterrupted eastward across the boreal region of central Canada, tend to be eastern, not western ones (e.g., *Panthea furcilla* (Packard), *P. acronyctoides* (Walker), and *Feralia major* Smith), and we consider it most likely that the *Dasychira* in this region also belong to the "eastern" fauna. It is also possible that *D. plagiata* and *D. griseata* would be best treated as a single variable species. More work is needed on this interesting problem.

1602 ***Dasychira grisefacta*** – See note 1601 on *D. plagiata*.

1603 ***Orgyia antiqua*** – Diurnal, but occasionally comes to ultraviolet light traps. All AB material examined is referable to subspecies *nova* Fitch. The subspecies *badia* Edwards has been recorded from Glacier National Park, MT, and probably occurs in AB; it is larger and has more contrasting wing markings (Ferguson 1978).

1603.1 ***Orgyia pseudotsugata*** – This species is known from southern BC and may occur in the extreme southwestern mountain region of AB in association with its host plant, Douglas-fir.

1604 ***Orgyia leucostigma*** – Reported in AB by Prentice (1962) and again by Ferguson (1978), but we have been unable to locate voucher specimens. There are specimens in the CNC from MB, and this species was reported as far west as Langham in central SK by Hooper (1988b). This species comes to light but is also at least occasionally diurnal (Handfield 1999). According to Ferguson (1978), the taxonomic status of western Canadian populations is unknown; if they truly exist, AB populations are probably referable to subspecies *intermedia* Fitch but could be more closely related to subspecies *oslari* Barnes, a rare subspecies currently known only from CO.

1605 ***Lycomorpha pholus*** – Known in AB from a single record from the Milk River area.

1607 ***Hypoprepia fucosa*** – Known in AB from specimens collected in the Medicine Hat area in 2007 by J. A. Scott and the Pakowki dunes in 2008 by GGA.

1610 ***Crambidia casta*** – Recent reports (Schmidt 2000; CBIF 2003) of *C. impura* Barnes and McDunnough in AB are incorrect; these specimens are dark variants of *C. casta* (BCS, unpublished data).

1611 ***Crambidia cephalica*** – Known in AB from the South Saskatchewan River near Bow Island (collected by GGA), Lethbridge (Ferguson et al. 2000), and the Lost River valley (collected by J. Troubridge).

1611.1 ***Virbia laeta*** – Occurs in central Canada west to north-central SK (Lac La Ronge; collected by L. Lumley) and probably occurs in east-central AB. The date of publication of the species description has been corrected to 1844, following the advice of J. D. Lafontaine (personal communication).

1612 ***Virbia* sp. nr. *aurantiaca*** – Recently recorded in AB from Redwater Natural Area (Schmidt 2000; erroneously listed as *V. lamae* (Freeman)), Colin–Cornwall Lakes,

Birch Moutnains (Macaulay and Pohl 2005; listed as *V. aurantiaca* (Hübner)), and Moose Lake Provincial Park (collected by C. B. Christensen). This species most resembles eastern *V. aurantiaca*, but AB populations are slightly larger and less brightly colored, with females often resembling *V. lamae* (illustrated as such in Schmidt 2000). It is sympatric with *V. ferruginosa* (Walker) in some localities (e.g., Birch Mountains) but is genetically distinct from both *V. ferruginosa* and eastern *V. aurantiaca* (BCS, unpublished data). Adults are both diurnal and nocturnal.

1613 ***Virbia ferruginosa*** – The larger, paler phenotype from the southern AB foothills (also occurring in southern BC) that has been referred to as *V. fragilis* (Strecker) (CBIF 2003) is conspecific with *V. ferruginosa* (specimens from the UASM determined by J. Zaspel and R. Carde in 2004). The range of *V. ferruginosa* is reported by Zaspel et al. (2008) as "NS to BC" without specifically mentioning AB. *Virbia fragilis* was described from CO and is found only in the western United States, occuring north to WY (BCS, unpublished data).

1614 ***Holoarctia sordida*** – Type locality: Banff, AB. This species is known globally from only six or seven localities, at least four of which are in the AB front ranges.

1615 ***Neoarctia beanii*** – Type locality: Laggan [= Lake Louise], AB.

1616 ***Holarctia obliterata*** – Previously known under the name *turbans* (Christoph), a junior synonym of *H. obliterata* (Ferguson 1991). Schmidt and Opler (2008) transferred the taxon *obliterata* from *Grammia* to *Holarctia*.

1618 ***Grammia phyllira*** – The most recent concept of this species includes *oithona* (Strecker) as a synonym (Schmidt 2009b).

1621 ***Grammia virguncula*** – See note 1622 on *G. speciosa*.

1622 ***Grammia speciosa*** – Recorded in AB in 2005 from the Birch Mountains, collected by G. J. Hilchie. This species occurs across the boreal region and appears to be found only in peatlands. It is closely related to *G. virguncula* (Kirby); Schmidt (2009b) suggested considering it a subspecies of *G. virguncula*.

1622.1 ***Grammia quenseli*** – This species was reported in AB from the Calgary – Fort McLeod area by Bowman (1951), which he referred to as "zone 6", but no voucher specimens can be located and there is no suitable habitat there. Owing to the taxonomic confusion in this group, Bowman's report probably represents a misidentification. However, *G. quenseli* is an arctic–alpine species known as far south as Mount Burdett, BC, and it may occur in the Rocky Mountains in AB. A record from MT (Ferguson et al. 2000) has not been substantiated and is also considered to be erroneous (Schmidt 2009b).

1623 ***Grammia margo*** – This recently described species was previously included within *G. celia* (Saunders).

1624 ***Grammia nevadensis*** – Subspecies *superba* (Stretch) is known in AB from Nordegg, Kootenay Plains, Jasper Lake, and the Peace River canyon. On the basis of morphological and molecular data (Schmidt 2009b), this subspecies, considered a distinct species by some, is a northern cordilleran representative of geographical variation in *G. nevadensis*. The subspecies *gibsoni* (McDunnough) of the northern Great Plains, formerly considered a distinct species, is a northern representative of geographical variation in *G. nevadensis*, on the basis of morphological and molecular data (Schmidt 2009b).

1627.1 ***Grammia ornata*** – This species is known from adjacent southeastern BC and northern MT; it may occur in the Waterton–Castle headwaters in the extreme southwest of AB.

1629 ***Pararctia lapponica*** – The only AB record is a specimen from Adam's Lookout near Grande Cache, collected on 10 July 1982 by E. M. Pike. This species is very similar to *P. yarrowii* (Stretch), but in *P. lapponica* the male antennal pectinations are longer than in *P. yarrowii* and the forewing is brown and white, not black–brown and yellow–white as in *P. yarrowii*.

1630 ***Pararctia yarrowii*** – The specific epithet was misspelled as *yarrowi* by Bowman (1951). A single hand-netted specimen was collected by L. Morneau from boreal forest at the EMEND (Ecosystem Management Emulating Natural Disturbance) study site near Dixonville (Morneau 2002), far from the typical rocky habitat of this species.

1631 ***Platarctia parthenos*** – This species is biennial, flying almost exclusively in even-numbered years in AB.

1631.1 ***Platyprepia virginalis*** – This species occurs through southern BC and northwestern MT; it may occur in southwestern AB.

1632 ***Arctia caja*** – This species is currently considered to be Holarctic, but there are several well-defined subspecies in western North America, one or more of which may prove to be specifically distinct from European populations. The widespread North American subspecies, including AB populations, is *americana* Harris.

1632.1 ***Arctia opulenta*** – This species is known from Summit Lake and Pink Mountain in northeastern BC and may occur further southeast into west-central AB.

1633 ***Phragmatobia fuliginosa*** – North American populations are referable to subspecies *rubricosa* (Harris), which may be a species distinct from European populations (Donahue and Newman 1966). *Phragmatobia fuliginosa* is primarily diurnal, but it occasionally comes to light. It has two broods in southern AB.

1634 ***Phragmatobia lineata*** – In 2008 C. D. Bird collected the first specimen of this species to be seen in AB in over 100 years, at East Arrowwood Coulee, 70 km southeast of Calgary. Previous material was collected by F. H. Wolley Dod in the Calgary area, with the most recent specimen from there collected in 1907. Wolley Dod's specimens were included in the type series (Donahue and Newman 1966).

1635.1 ***Leptarctia californiae*** – This species occurs throughout southern BC and northwestern MT and may occur in the extreme southwestern mountain region of AB.

1638 ***Hyphantria cunea*** – Reported as *Hyphantria textor* (Harris) by Bowman (1951), a name that was subsequently placed in synonomy with *H. cunea* (Franclemont 1983). Mitochondrial DNA data show that there are multiple divergent lineages within the current concept of *H. cunea*, which may indicate that *H. cunea* populations represent more than one species after all (BCS, unpublished data).

1642.1 ***Spilosoma pteridis*** – This species was reported in AB by Bowman (1951) but his records refer to *S. danbyi* (Neumoegen and Dyar), then considered a synonym but now recognized as a valid species. *Spilosoma pteridis* is known from BC and MB and may yet be found in southern AB.

1643 ***Spilosoma danbyi*** – Previously considered a synonym of *S. pteridis* Edwards and reported as such from AB by Bowman (1951). Ferguson et al. (2000) recognized the boreal populations as a distinct species, *S. danbyi*.

1644 ***Hypercompe permaculata*** – Genus placement follows Watson and Goodger (1986). This species is double brooded in southern AB.

1645 ***Dodia albertae*** – Type locality: head of Pine Creek, near Calgary, AB. This species is known in AB only from the type locality and Caribou Mountains Wildland Park.

1646 ***Dodia tarandus*** – Sympatric and previously confused with *D. albertae* Dyar. Both species were included under *D. albertae* by Tshistjakov and Lafontaine (1984).

1647 ***Haploa lecontei*** – The date of publication of the species description has been corrected to 1844, following the advice of J. D. Lafontaine (personal communication).

1647.1 ***Haploa confusa*** – Occurs in western SK adjacent to the AB border (Ferguson et al. 2000) and probably also occurs in east-central AB.

1648 ***Gnophaela vermiculata*** – Reported from AB by Bowman (1951) as *G. latipennis vermiculata*, and by Ives and Wong (1988) as *G. latipennis* (Boisduval), on the basis of a much earlier taxonomic arrangement. *Gnophaela latipennis* is now recognized as a species distinct from *G. vermiculata* and does not occur in AB.

1648.1 ***Halysidota tessellaris*** – Ferguson et al. (2000) gave a record of this species from west-central SK near the AB border, and this species may occur in AB as well. It is polyphagous on deciduous trees.

1650 ***Cycnia tenera*** – Known in AB from recent collections from Redcliff by J. Acorn and J. A. Scott and from Buffalo by BCS.

1652 ***Ctenucha virginica*** – Although not listed by Bowman (1951), this conspicuous diurnal moth is now common in central AB, including the Edmonton area. Were it in AB 50 years ago, Bowman would certainly not have overlooked it. The first known AB records are from the Fort MacMurray area in the 1950s; this species was first collected in southern AB at Pigeon Lake in 1973 by a very young GRP.

1654 ***Idia americalis*** – Populations from cooler, more mesic boreal and montane areas are smaller and duskier than "normal" *I. americalis*, but there were no differences in the DNA barcode from a single specimen of each population (GGA, unpublished data).

1655 ***Idia aemula*** – Reports before 1990 do not distinguish between *I. aemula* and *I.* sp. nr. *aemula* and may refer to either or both species.

1656 ***Idia* sp. nr. *aemula*** – This species is reported to feed on living needles of conifers, a very unusual host for *Idia* species (Prentice 1962). Most records for *I. aemula* in Bowman (1951) and Prentice (1962) apparently refer to this undescribed species (see Rings et al. (1992) for a discussion).

1657 ***Idia lubricalis*** – Unpublished mtDNA barcode data suggest the possibility that *I. lubricalis* is a species complex and that AB material may belong to an undescribed species.

1658 ***Idia occidentalis*** – Until recently (Mustelin 2006) this taxon was treated as a subspecies of *I. lubricalis* (Geyer).

1659 ***Idia immaculalis*** – Transferred from the genus *Reabotis*, herein deemed to be a synonym of *Idia* (see entry A21 in the Appendix).

1661 ***Zanclognatha pedipilalis*** – Known in AB from one historic specimen from Whitlaw.

1665.1 ***Macrochilo absorptalis*** – This species occurs in central Canada west to central SK; it may also occur in eastern AB.

1667.1 ***Renia flavipunctalis*** – Reported by CBIF (2003) from AB, but this is erroneous information as no records or vouchers are known to exist. However, this species is known in central Canada west to southeastern SK and it may yet be found in southeastern AB.

1670 ***Pangrapta decoralis*** – Known in AB only from a collection in 2005 from Moose Lake Provincial Park by C. B. Christensen.

1674 ***Hypena deceptalis*** – This species in known in AB only from the western edge of the parklands, from Olds and Winfield.

1678.1 ***Hypena scabra*** – This species occurs in central Canada west to central SK and may occur in southeastern AB.

1679 ***Hypena eductalis*** – Previously placed in the genus *Lomanaltes* (Lafontaine and Schmidt in press).

1680 ***Scoliopteryx libatrix*** – Adults have been found hibernating in limestone caves in MB (McKillop 1993). This species was named from Europe, and it is not clear if it is naturally Holarctic, if North American populations represent a cryptic species, or if North American populations are human-assisted introductions.

1681 ***Hypenodes fractilinea*** – Listed by Bowman (1951) as *Menopsimus* (= *Hypenodes*) *caducus* Dyar. At the time, *H. fractilinea* was considered to be a synonym of the taxon *caducus*. True *H. caducus* does not occur in AB. The series in the Bowman collection that had been identified as *H. caducus* also contains two specimens of *H. sombrus* Ferguson.

1682 ***Hypenodes sombrus*** – Two AB specimens of *H. sombrus* were recently found in the Bowman collection at the UASM, misidentified as *H. caducus* (Dyar).

1685 ***Ascalapha odorata*** – This is a tropical species that often strays great distrances from its native range. Adults have been encountered occasionally as far north as central AB.

1686 ***Lygephila victoria*** – Recently (2005) found in Waterton Lakes National Park by BCS.

1686.1 ***Tathorynchus exsiccata*** – Occurs in central Canada west to southern SK and may occur in southern AB.

1688 ***Melipotis acontioides*** – This species is a resident of the southern United States but is known to stray northward; Richards (1939) reported a specimen from Didsbury but its whereabouts are not known, so we list the species here as unconfirmed for AB.

1689 ***Bulia deducta*** – Bowman (1951) lists this species as having been found in Calgary, possibly on the basis of an old specimen collected by F. H. Wolley Dod. We have been unable to locate the specimen but this species is known to wander northward from its range in the southern United States and is unlikely to be mistaken for anything else.

1690 ***Drasteria sabulosa*** – Several specimens collected in Waterton Lakes National Park in 2006 by BCS, GGA, and J. J. Dombroskie are the first AB records.

1691 ***Drasteria pallescens*** – Known in AB only from Writing-On-Stone Provincial Park, Taber, Medicine Hat and Sandy Point campground on the South Saskatchewan River.

1692 ***Drasteria divergens*** – Known in AB only from Waterton Lakes National Park, from two old specimens in the park collection and a third collected in 2005 by BCS.

1693 ***Drasteria petricola*** – The nominate subspecies occurs in the mountains and foothills and is replaced by the much paler subspecies *athabascae* Neumoegen in the grasslands and boreal regions. These probably both represent distinct species, but the current arrangement is retained pending further research.

1694 ***Drasteria hudsonica*** – The nominate subspecies occurs in the mountains and foothills and is replaced in the grasslands and boreal regions by the paler subspecies *heathi* (Barnes and McDunnough). These probably both represent distinct species, but the current arrangement is retained pending further research.

1696 ***Drasteria adumbrata*** – The subspecies *saxea* (Edwards) occurs in the mountains and foothills regions and is replaced by subspecies *alleni* (Grote) in the grasslands and boreal regions. These may both represent distinct species.

1697 ***Drasteria howlandii*** – The only AB record is a single specimen collected in 2004 by GGA in the Lost River valley near Onefour.

1698 ***Euclidia cuspidea*** – Adults are active during the day but also are collected in light traps at night.

1700 ***Caenurgina crassiuscula*** – The small adults of the spring generation of this species were previously treated as a separate species, *C. distincta* Neumoegen, which is synonymized herein (see entry A22 in the Appendix).

1701.1 ***Zale lunata*** – Although not yet recorded from AB, this species has been reported from both MB and BC.

1702 ***Zale galbanata*** – The sole AB record is a specimen in the CNC collected near Drumheller by J.-F. Landry.

1704 ***Zale duplicata*** – AB material is referable to subspecies *largera* (Smith).

1709 ***Catocala hermia*** – Bowman (1951) listed the Wainwright–Lloydminster region (which he called zone 7) as a locality for this species. There are no specimens in his collection from that area and we have seen no specimens from further north than the Tolman Bridge area in the Red Deer River valley, southeast of Red Deer.

1710 ***Catocala californica*** – Known in AB from specimens collected at Waterton Lakes National Park in 2005 and 2008 by BCS, GGA, and J. J. Dombroskie. The specimens appear to be identical to examined specimens of *C. californica* from Creston and Kaslo, BC.

1712 ***Catocala grotiana*** – a western species recently recorded from Waterton Lakes National Park, representing the first records for AB and Canada.

1713 ***Catocala semirelicta*** – Most AB material is form "*atala*" Cassino, which lacks the dark streak along the lower forewing.

1714 ***Catocala meskei*** – AB specimens assigned to this name are puzzling, and we suspect there are two species involved. Bowman (1951) listed the AB specimens as *C. meskei* and also as subspecies *orion* McDunnough and *concolorata* McDunnough, although the latter was described by McDunnough as a form, not a subspecies. The AB specimens currently identified as *C. meskei* are badly in need of further study. Rearing larvae of the various forms would be very informative, because larval color patterns in *Catocala* are diagnostic.

1716.1 ***Catocala sordida*** – This species occurs in central Canada west to Pinehouse Lake in northwestern SK and probably occurs in adjacent northeastern AB. It should be sought in association with the larval host, *Vaccinium* spp. (Ericaceae).

1718 ***Catocala praeclara*** – Known in AB from single specimens collected at Tolman Bridge and Writing-On-Stone Provincial Park and from two specimens from the Pakowki dunes. It is found associated with *Prunus* (Rosaceae) in xeric sites.

1720 ***Marathyssa inficita*** – Known in AB from several recent collections in southeastern AB.

1722 ***Nycteola frigidana*** – This species is restricted to *Salix* (Salicaceae) hosts (Prentice 1962). These moths hibernate as adults and research suggests that they have more than one annual brood.

1723 ***Nycteola cinereana*** – Not listed by Bowman (1951), but his series in the UASM that was identified as *N. frigidana* (Walker) contains both species. *Nycteola cinereana* is restricted to *Populus* (Salicaceae) hosts (Prentice 1962).

1723.1 ***Baileya doubledayi*** – This species occurs in central Canada west to west-central SK (Big River; specimens in the NFRC); it may occur in eastern AB.

1724 ***Baileya ophthalmica*** – This species was not recorded by Bowman (1951), although it is now relatively common in east-central AB, including Edmonton. It appears likely that this species arrived in the Edmonton area after Bowman stopped collecting in the 1950s.

1726 ***Trichoplusia ni*** – It appears that *T. ni* cannot overwinter in AB, and AB adult specimens are either migrants from the south or AB-reared progeny of these migrants. Bowman (1951) reported AB specimens as subspecies *brassicae* Riley.

1730 ***Pseudeva palligera*** – Discovered in AB at Waterton Lakes National Park in 2007 by GRP and collected again in 2008 by GGA.

1731 ***Polychrysia esmeralda*** – North American populations were originally thought to be conspecific with western European *P. moneta* (Fabricius). North American populations are currently recognized as being conspecific with eastern Eurasian *P. esmeralda* (Kononenko et al. 1989; Lafontaine and Poole 1991). In addition to feeding on native *Delphinium* species (Ranunculaceae) in the mountains, *P. esmeralda* is a common pest on garden plantings of *Delphinium* and monkshood (*Aconitum* species; Ceratophyllaceae) across the parkland and prairies to at least southeastern SK (GGA, personal observation). The taxon *trabea* (Smith), a synonym of *P. esmeralda*, was described from Calgary specimens.

1734 ***Megalographa biloba*** – Known in AB from two specimens collected at Lethbridge in 1981 by J. R. Byers and deposited in the AGRL. This species occasionally migrates into the northern United States and southern Canada from the southern United States in late summer (Lafontaine and Poole 1991).

1745 ***Anagrapha falcifera*** – Occurs in overlapping double broods in AB, with peaks in mid June and late August. This species has two forms, one rust-red and the other gray.

1748 ***Syngrapha selecta*** – Bowman (1951) reported this species for AB, but all his vouchers have been re-identified as *S. viridisigma* (Grote). Most of Prentice's (1962) records also probably refer to *S. viridisigma*. However, single specimens of *S. selecta* have recently been collected in AB, in the foothills and in the Canadian Shield north of Lake Athabasca (specimens in the UASM).

1749 ***Syngrapha viridisigma*** – The validity of *S. viridisigma* as a species separate from *S. selecta* (Walker) was demonstrated by Eichlin and Cunningham (1978). Literature reports of *S. selecta* before 1978 combined *S. viridisigma* with *S. selecta* (see note 1748 on the latter species).

1751 ***Syngrapha borea*** – Listed by Bowman (1951) as *S. lula* Strand, a recently designated synonym (Lafontaine and Poole 1991). Bowman's (1951) erroneous records of *S. sackenii* (Grote) are based on atypical specimens of *S. borea* (Lafontaine and Poole 1991).

1752 ***Syngrapha diasema*** – Collected in AB in the southern Rocky Mountains, north to Nordegg, and in the highlands of the Birch Mountains in the northern boreal forest (the latter collected by D. A. Macaulay).

1753 ***Syngrapha interrogationis*** – Known in AB from the northern Rocky Mountains south to Nordegg, the Canadian Shield north of Lake Athabasca, and Wagner Fen near Edmonton. It is probably more widespread in boreal forest peatlands, but undercollected.

1754 ***Syngrapha surena*** – Known in AB from a single specimen from Nordegg, collected by K. Bowman in 1939.

1758.1 ***Syngrapha montana*** – Occurs in SK just east of Lloydminster, as well as in AK; it probably also occurs in AB. Bowman (1951) erroneously reported *S. montana* in AB, as *S. microgramma* [sic] *montana* (Packard); his specimens in the UASM are all from the mountains and are referable to *S. microgamma* (Hübner), now considered a species separate from *S. montana*.

1759 ***Syngrapha microgamma*** – Bowman (1951) listed this species both as *S. microgramma* [sic] and in error as *S. microgramma montana* Packard, now a valid species. See note 1758.1 on *S. montana*.

1760 ***Syngrapha alticola*** – Recently removed from synonymy with *S. devergens* (Hübner) (Mikkola et al. 1991).

1763 ***Plusia putnami*** – Older literature records may include the recently described *P. magnimacula* Handfield and Handfield under the name *P. putnami* (see note 1764 on the former species).

1764 ***Plusia magnimacula*** – A newly described species of *Plusia* related to the Palaearctic species *P. festucae* (Linnaeus) that has been hiding under the name *P. putnami* Grote in collections. *Plusia magnimacula* has usually been found associated with boggy sites in the boreal region. We have seen AB specimens from Jasper and Wagner Natural Area, and Handfield and Handfield (2006) included a Nordegg specimen in their list of specimens examined. Historical records of *P. putnami* may thus refer to either species, and specimens from boggy areas in particular should be reexamined.

1764.1 ***Plusia contexta*** – This species was recorded from central Canada as far west as central SK (Fort Qu'Appelle and Saskatoon); it may occur in eastern AB.

1767 ***Protodeltote albidula*** – This generic combination follows Lafontaine and Schmidt (in press); previously placed in *Lithacodia*.

1767.1 ***Maliattha synochitis*** – Occurs in central Canada west to south-central SK (Rockglen) and may occur in southeastern AB.

1768 ***Ponometia semiflava*** – Usually found associated with sandy areas. Previously placed in *Tarachidia*; revised combination follows Lafontaine and Poole (in press).

1769 ***Ponometia binocula*** – Usually found associated with sandy areas. Previously placed in *Tarachidia*; revised combination follows Lafontaine and Poole (in press).

1770 ***Ponometia tortricina*** – Previously placed in *Tarachidia*; revised combination follows Lafontaine and Poole (in press).

1771 ***Ponometia elegantula*** – Previously treated as *Conochares arizonae* (Edwards), a recent synonym (Lafontaine and Poole in press).

1772 ***Ponometia sutrix*** – Known in AB only from a few specimens collected from a small isolated sand blowout on the east rim of the Lost River valley, just southwest of the Agriculture Canada Onefour Research Substation, by GGA and D. A. Macaulay. The AB specimens are much darker than those seen from NV, and there are differences in the male genitalia as well, suggesting the AB population may not be conspecific with NV material. More specimens and study are needed.

1773 ***Tarache augustipennis*** – The specific epithet was misspelled by Bowman (1951) as *angustipennis*. This species has a very long flight period and probably has more than one brood in AB. The taxon *flavicosta* (Smith) is herein synonymized with *T. augustipennis* (see entry A23 in the Appendix). Previously placed in *Therasea*, revised combination follows Lafontaine and Poole (in press).

1774 ***Panthea acronyctoides*** – Specimens in the UASM, determined and listed by Bowman (1951) as *P. virginarius* (Grote) are all misidentified *P. acronyctoides*. Specimens of *P. acronyctoides* from central AB (Edmonton) are intermediate in appearance between typical black-and-white eastern populations and the dark subspecies *nigra* Anweiler that occurs throughout the mountain and foothills region (Anweiler 2009). *Panthea* host and distribution data presented in Prentice (1962) (and repeated by Ives and Wong 1988) are unreliable owing to the many *Panthea* identification errors among the specimens in the collections of the Forest Insect and Disease Survey of the Canadian Forest Service housed in the CNC and NFRC.

1775 ***Panthea virginarius*** – Specimens in UASM reported by Bowman (1951) as *P. virginaria* are all misidentified *P. acronyctoides* (Walker). *Panthea virginarius* occurs in AB in the mountains from about Banff southward, as well as in the Porcupine and Cypress Hills. See comment on Prentice's (1962) records in note 1774 on *P. acronyctoides*.

1776 ***Panthea furcilla*** – Canadian specimens of *P. furcilla* have been reported under the name *pallescens* McDunnough (e.g., Handfield 1999). However, an examination of the types of both *furcilla* and *pallescens* indicates that both names refer to the same species, with *P. furcilla* having priority (Anweiler 2009). See also the comment on Prentice's (1962) records in note 1774 on *P. acronyctoides* (Walker).

1776.1 ***Colocasia flavicornis*** – This species occurs in the boreal forest of eastern SK and may occur in similar habitat in eastern AB.

1778 ***Raphia frater*** – *Raphia* populations in AB have usually been treated as two species, with dark gray *R. frater* in the cooler and more mesic parklands and mountains and paler, two-tone light and dark gray *R. coloradensis* (Putnam-Cramer) largely replacing it in the wooded parts of the arid grasslands region. However, recent mtDNA barcode data (GGA, unpublished data) support our interpretation that AB *Raphia* populations represent a single species. We treat both forms as varieties of *R. frater,* the older name.

1779 ***Acronicta americana*** – This species is known primarily from historical collections in southeastern AB north to about Calgary and Lloydminster (Bowman 1951; Prentice 1962) and east to Raymond (specimens in the UASM); most of these collections took place in the 1940s. Specimens collected in 2007 in Medicine Hat by J. A. Scott are the only recent records. This is an eastern species that, like *Hyalophora cecropia*, in this part of its range feeds mainly on maple and shows a pattern of having appeared and then apparently receded sometime in the middle of the last century. The apparent increase in abundance coincided with widespread introduction of Manitoba Maple in shelterbelt and urban plantings following the drought of the 1930s. The record from the Peace River district in Prentice (1962) is assumed to be an error.

1780 ***Acronicta dactylina*** – Includes *hesperida* Smith, a new synonym of *A. dactylina* (see entry A24 in the Appendix). Bowman (1951) reported this species from Edmonton as both *A hesperida* and *A. dactylina*. Prentice (1962) used the name *A. dactylina hesperida* for BC specimens and the name *A. dactylina* for specimens from the rest of Canada.

1781 ***Acronicta lepusculina*** – Some AB specimens are difficult to separate from *A. cyanescens* Hampson, which is recognized as a distinct species herein (see entry A25 in the Appendix).

1782 ***Acronicta cyanescens*** – Previously treated as a subspecies of *A. lepusculina* Guenée but recognized herein as a separate species (see entry A25 in the Appendix). Collected in the Crowsnest Pass and Waterton Lakes National Park in 2004 and 2005 by (BCS and C. D. Bird.

1783 ***Acronicta vulpina*** – Previously treated as being conspecific with the Palaearctic species *A. leporina* (Linnaeus) but now recognized as a separate species occurring from North America to eastern Russia (Mikkola et al. 1991). AB material is referable to subspecies *cretatoides* (Benjamin). This species was listed by Bowman (1951) as *A. leporina cretatoides* and by Prentice (1962) as *A. leporina*.

1786 ***Acronicta tritona*** – The only AB record of this otherwise eastern species is a single fresh female collected near Fort McMurray in 2001 by D. A. Macaulay.

1787 ***Acronicta grisea*** – Includes *tartarea* Smith, a new synonym (see entry A26 in the Appendix).

1788 ***Acronicta falcula*** – Restricted in AB to the wooded parts of the dry grasslands and southern mountains. There is some evidence of at least a partial second brood in early September. Previously known as *mansueta* Smith, a recent synonym (Lafontaine and Schmidt in press)

1788.1 ***Acronicta funeralis*** – Occurs in both MB and southern BC and probably also will be found in southern AB.

1789 ***Acronicta quadrata*** – Found mainly in the drier, warmer grasslands and southern mountains, with a disjunct population in the Peace River district.

1790 ***Acronicta superans*** – This appears to be a recent arrival in AB, as Bowman (1951) did not record this species. It is now relatively common in Edmonton and is widespread in the aspen parkland region, even reaching the foothills.

1791 ***Acronicta hasta*** – We treat *furcifera* Guenée as a synonym of *A. hasta* following Forbes (1954), Rings et al. (1992) and Lafontaine and Schmidt (in press).

1792 ***Acronicta interrupta*** – Known in AB only from a single somewhat worn specimen collected in 2001 by GGA along the lower South Saskatchewan River at Sandy Point Recreation Area and from recent collections from Medicine Hat by J. A. Scott.

1794 ***Acronicta impleta*** – AB material is referable to the dark western subspecies *illita* Smith.

1795 ***Acronicta sperata*** – Found mainly in xeric grasslands and badlands habitat.

1796 ***Acronicta impressa*** – We follow Rings et al. (1992) in treating *A. distans* Grote and *A. impressa* as a single species pending further research, as there appears to be no reliable way of separating most specimens. Collection data indicate that this taxon has at least a partial second brood. Bowman (1951) listed both *A. distans* and *A. impressa*.

1797 ***Acronicta longa*** – Known in AB from recent collections in the grasslands region.

1797.1 ***Acronicta perdita*** – This species occurs in BC east to the Kootenays and may occur in southwestern AB.

1799 ***Acronicta lanceolaria*** – Known in AB from three recent collections by GGA and BCS in the grasslands region: Edgerton dunes, Jenner Bridge, and the Oldman River badlands south of Vauxhall.

1800 ***Acronicta lupini*** – Bowman (1951) listed both *A. lupini* and *A. ursina* Smith (both in the genus *Merolonche*), the latter a new synonym (see entry A27 in the Appendix). *Merolonche* was synonymized under *Acronicta* by Lafontaine and Schmidt (in press).

1801 ***Simyra insularis*** – Known until recently under the name *henrici* Grote, a recently designated synonym (Becker 2002).

1802 ***Harrisimemna trisignata*** – The first AB specimens were collected near Barrhead in 1992 by D. A. Macaulay. *Harrisimemna trisignata* has since been found to be widespread but uncommon in the southern boreal forest, aspen parkland, and wooded parts of the grasslands.

1802.1 ***Cucullia asteroides*** – This species occurs in central Canada west to Saskatoon, SK, and may occur in southeastern AB.

1804 ***Cucullia similaris*** – Known in AB from a single specimen from Didsbury (specimen in the CNC). Poole (1995) and Bowman (1951) also referred to a record from the Drumhellller area, possibly based on material collected by F. H. Wolley Dod housed in the USNM.

1805 ***Cucullia omissa*** – Type locality: Calgary (head of Pine Creek).

1807.1 ***Cucullia convexipennis*** – This species has been recorded in central Canada west to central SK (Last Mountain Lake); it may occur in southeastern AB.

1810 ***Cucullia dorsalis*** – Known in Canada only from a recent (2000) collection of four specimens at Dinosaur Provincial Park by GGA, BCS, and D. Lawrie and a photograph taken by GRP in 2007 of a larva from Tolman Bridge (image on file at the NFRC).

1813 ***Cucullia strigata*** – Bowman's (1951) record of *C. serraticornis* Lintner (reported as *Rancora solidaginis* (Strecker), a recently designated synonym) is referable to *C. strigata*. *Cucullia serraticornis* is restricted to the southwestern United States (Poole 1995).

1814 ***Cucullia albida*** – Listed by Bowman (1951) as *Rancora albicinerea* Smith, a recently designated synonym (Poole 1995).

1817.1 ***Copivaleria grotei*** – Occurs in central SK and may also occur in eastern AB.

1824 ***Plagiomimicus expallidus*** – This species is known in AB from old (1943) collections at Medicine Hat, and a recent record from Sandy Point campground on the South Saskatchewan River; Bowman (1951) also listed the Lethbridge area as a locality, but no Lethbridge vouchers are known.

1827 ***Pseudacontia crustaria*** – Known in AB from two recent collections, from a small sand blowout on the rim of the Lost River valley near Onefour by D. A. Macaulay and in residential Medicine Hat by J. A. Scott.

1828 ***Pleromelloida conserta*** – Two forms of *P. conserta* occur in AB, both of which were listed as species by Bowman (1951). The more common, widespread, "normal" form is *obliquata* Smith; the less common melanic form is *conserta*, which is more or less restricted to the mountains and foothills. Additional research is needed to determine if the two forms are in fact conspecific.

1829 ***Pleromelloida bonuscula*** – Recently added to the AB list on the basis of a single specimen collected at Onefour by D. A. Macaulay.

1830 ***Pleromelloida cinerea*** – Recently (2005, 2006) collected in the mountains of southern AB south of the Crowsnest Pass by E. M. Pike, GGA, and BSC and in the Peace River district by D. A. Macaulay.

1831 ***Sympistis albifasciata*** – Bowman (1951) listed this species from Lethbridge and Edmonton. Edmonton seems an improbable locality for this species, which is otherwise restricted to xeric grassland habitats, and we have been unable to locate an Edmonton specimen to verify the record. This and many other species were previously placed in *Oncocnemis*, a synonym of *Sympistis* (Troubridge 2008).

1832 ***Sympistis saundersiana*** – An eastern Canadian species, recently collected in east-central AB near Stettler by C. D. Bird.

1834 ***Sympistis umbrifascia*** – Reported from AB by Crumb (1956), but no vouchers are known. It is known with certainty from BC as far east as Fort Steele.

1834.1 ***Sympistis balteata*** – Occurs in southwestern SK (Stewart Valley; specimen in the CNC) and may also occur in southeastern AB.

1834.2 ***Sympistis parvanigra*** – Occurs in the BC interior east to Kaslo and may occur in adjacent AB.

1837.1 ***Sympistis fifia*** – A western species that occurs east to southeastern BC and may occur in adjacent southwestern AB. It was listed by Bowman (1951) in error, on the basis of misidentified specimens of *S. dinalda* (Smith) (see also note 1838 on that species).

1838 ***Sympistis dinalda*** – This species was previously treated as a subspecies of *S. infixa* (Walker) but has recently been recognized as distinct (Troubridge 2008). *Sympistis infixa* is restricted to the southeastern United States. Although Bowman (1951) did not list *S. dinalda*, there is a series in his collection in the UASM that was misidentified and reported as *Homohadena* (= *Sympistis*) *fifia* (Dyar), a BC species

not known from AB. The genus *Homohadena* was synonymized with *Sympistis* by Troubridge (2008).

1839 ***Sympistis glennyi*** – Includes *phairi* (McDunnough), a recently designated synonym (Troubridge 2008).

1840 ***Sympistis lepipoloides*** – A rare species known in AB only from old collections at Lethbridge.

1842 ***Sympistis insanina*** – This recently described species was included for many years within *S. sanina* (Smith) and was reported as such from AB by Bowman (1951) and Hooper (1992). *Sympistis sanina* occurs further south, from WY to NM, and does not occur in AB. The holotype of *S. insanina* was collected in AB along the South Saskatchewan River in or adjacent to the Sandy Point Municipal Recreation Area.

1844 ***Sympistis mackiei*** – In addition to the grasslands populations, Bowman (1951) listed this species from the Banff and Jasper regions. We have not seen specimens to verify the occurrence of this species in the mountains.

1848 ***Sympistis sandaraca*** – This species had not yet been described at the time of publication of Bowman (1951), but there are five specimens of *S. sandaraca* from Hillcrest in his material in the UASM, reported by him as "*Oncocnemis* (= *Sympistis*) *haysi* [sic] Grote." The true *S. hayesi* does not occur in AB. Bowman also listed Banff as a locality for "*haysi*," but we have been unable to locate the specimen to verify that record.

1849 ***Sympistis pudorata*** – Known in AB only from an old Banff specimen.

1850 ***Sympistis amun*** – A recently described species that had long been confused with *S. major* (Grote) in collections. It is known in AB only from Waterton Lakes National Park; one Waterton specimen is included in the type series.

1851 ***Sympistis chons*** – This recently described species was reported in AB by Bowman (1951) under the name *Oncocnemis* (= *Sympistis*) *major* (Grote). *Sympistis major* is a southwestern species not known to occur in AB. *Sympistis chons* is known in AB from across the grasslands region, including the Peace River area.

1852 ***Sympistis riparia*** – *Sympistis riparia* and *S. chons* Troubridge (the latter reported by Bowman (1951) under the name *S. major* (Grote)) have long been confused or treated as the same species, and historical reports may refer to either species. In AB, *S. riparia* is associated with sandy habitats east of the mountains, whereas *S. chons* has been found in association with clay badlands in southern AB and in the Peace River area (see note 1851 on *S. chons*).

1853 ***Sympistis chionanthi*** – This species has traditionally been placed in *Adita*, which was synonymized with *Sympistis* by Troubridge (2008).

1855 ***Sympistis chalybdis*** – See note 1856 on *O. piffardi*.

1856 ***Sympistis piffardi*** – Bowman's (1951) records of *S. piffardi* refer to both *S. piffardi* and the recently described *S. chalybdis* (Troubridge and Crabo). *Sympistis piffardi* occurs in the aspen parkland; *S. chalybdis* occurs in AB in the foothills and mountains.

1857 ***Sympistis funebris*** – Recorded in AB only from Banff and Lake Louise. Listed by Bowman (1951) as *S. funesta* (Paykull, 1793), a primary homonym of *Noctua funesta* Esper, 1786.

1858 ***Sympistis dentata*** – Bowman (1951) recognized *S. dentata* and *S. anweileri* Troubridge and Lafontaine as separate species, even though the latter had not been described at that time. He reported *S. dentata* under the name *S. pyralis* (Smith), then considered a separate species but later synonymized by Troubridge (2008). He report-

ed *S. anweileri* under the name *S. dentata*. This species has traditionally been placed in *Apharetra*, which was synonymized with *Sympistis* by Troubridge (2008).

1859 ***Sympistis anweileri*** – This recently described species had previously been confused with *S. dentata* (Grote). It largely replaces *S. dentata* in the mountains. Bowman's record of *S. dentata* refers to this undescribed species; see note 1858 on *S. dentata*.

1860 ***Sympistis extremis*** – Discovered in AB in 2006 in Waterton Lakes National Park by GGA, BCS, and J. J. Dombroskie. This species was originally reported in error as *Oncocnemis* (= *Sympistis*) *chorda* (Grote) (Anweiler 2006b; Schmidt 2007).

1861 ***Sympistis wilsoni*** – Known in AB only from one old Banff record (specimen in the CNC) and a recent collection from the mountains north of Jasper by G. J. Hilchie.

1862 ***Sympistis heliophila*** – The first collections of this species in AB were in 2003 and 2004 in AB in the Caribou Mountains (Schmidt et al. 2004), Birch Mountains (misidentified by Macaulay and Pohl (2005) as *S. zetterstedtii* (Staudinger), now considered a subspecies of *S. nigrita* (Boisduval)), and the southern Rocky Mountains. This species was previously known as *S. melaleuca* (Thunberg) but is now recognized as being conspecific with the Holarctic species *S. heliophila*.

1863 ***Sympistis nigrita*** – Specimens from the Rocky Mountains of AB are referable to subspecies *zetterstedtii* (Staudinger), treated until recently as a separate species (Troubridge 2008). A report from the Birch Mountains. (Macaulay and Pohl 2005; as *S. zetterstedtii*) was based on misidentified *S. heliophila* (Paykull). Macaulay and Pohl (2005) also erroneously cited Schmidt et al. (2004) as listing *S. nigrita zetterstedtii* from the Caribou Mountains; those specimens were correctly reported as *S. heliophila* by Schmidt et al. (2004).

1863.1 ***Sympistis dayi*** – This species occurs in the United States north to Havre, MT, and may occur in southern AB.

1864 ***Sympistis pallidior*** – Bowman's (1951) records of *S. figurata* (Harvey) have been corrected to *S. pallidior*, recently recognized as a distinct species (Troubridge 2008).

1866 ***Alypia ridingsii*** – The only known AB specimen was found in 2008 in the S. S. Shigematsu collection, now housed at the UASM. It was collected at Highwood Pass on 7 July 1968 by S. S. Shigematsu.

1869 ***Condica discistriga*** – Known in AB only from recent (2000) collections in the Lost River valley.

1870 ***Crambodes talidiformis*** – Known in AB only from old collections at Lethbridge from 1921–1925.

1873 ***Pyrrhia exprimens*** – Reported as *P. umbra exprimens* by Bowman (1951). *Pyrrhia exprimens* is now considered to be a full species; *P. umbra* (Hufnagel) is a Palearctic species that has long been confused with *P. adela* Lafontaine and Mikkola, a recently described eastern species not known to occur as far west as AB.

1874 ***Helicoverpa zea*** – This species is a serious pest of corn in temperate regions.

1875 ***Heliothis phloxiphaga*** – Collection records suggest two broods in AB, with peaks in May and early September.

1876 ***Heliothis acesias*** – Reported from southern AB without details by Hardwick (1994), probably on the basis of a specimen in the CNC that is labeled "Alberta, Dunes."

1880 ***Schinia nuchalis*** – Reported by Bowman (1951) as *Canthylidia scutosa* [Denis and Schiffermüller], a Palaearctic species. Mikkola et al. (1991) recognized North American populations as distinct from *S. scutosa*, with *Protoschinia nuchalis* (Grote) the appropriate name for North American populations. Although Hardwick (1996) also

placed the taxon *nuchalis* in *Protoschinia*, we follow Fibiger and Hacker (2005) in treating *Protoschinia* as a synonym in a broader concept of *Schinia*.

1887 ***Schinia verna*** – In addition to a historic (1929) specimen from Medicine Hat in the collection of the USNM, there are two recent AB collections by GGA of single specimens of this rare diurnal moth: one from the Red Deer River valley north of Jenner in 2000 and one near Alliance in 2007. This species has been assessed as "threatened" by the Committee on the Status of Endangered Wildlife in Canada and is currently being considered for protected status under the Species At Risk Act (COSEWIC 2009a).

1890 ***Schinia roseitincta*** – First recorded in 2006 on the basis of a single specimen collected in a black-light trap near the rim of the Red Deer River valley north of Jenner by E. M. Pike.

1891 ***Schinia acutilinea*** – AB material occurs in a patterned form and an immaculate white form as well as intermediate forms.

1893 ***Schinia avemensis*** – Known in AB from at least three recently discovered populations as well as a single specimen collected at Medicine Hat by E. H. Strickland in 1939. The Medicine Hat specimen was only recently discovered by BCS among unidentified material in the UASM. This species has been assessed as "endangered" by the Committee on the Status of Endangered Wildlife in Canada and is protected under the Species At Risk Act (COSEWIC 2009a).

1894 ***Melaporphyria immortua*** – This rarely collected species is known in AB from three old specimens collected on separate occasions at Edmonton by K. Bowman. It is also known from Lloydminster (labeled as being from the SK side). This species was assessed for conservation status by the Committee on the Status of Endangered Wildlife in Canada but was deemed "data deficient" (COSEWIC 2009a).

1895 ***"Cryphia" olivacea*** – Recently (2006) discovered in AB at Kootenay Plains and Waterton Lakes National Park by BCS. The genus *Cryphia* is strictly Eurasian, but the North American species are provisionally maintained therein pending generic revision (Lafontaine and Schmidt in press).

1896 ***"Cryphia" cuerva*** – Known in AB from a single old (1922) specimen in the CNC, collected at Banff. The genus *Cryphia* is strictly Eurasian, but the North American species are provisionally maintained therein pending generic revision (Lafontaine and Schmidt in press).

1899 ***Spodoptera praefica*** – Known in AB from recent collections at Writing-On-Stone Provincial Park by GGA and Medicine Hat by J. A. Scott.

1900 ***Elaphria alapallida*** – AB *Elaphria* specimens were reported until recently under the name *E. festivoides* (Guenée). True *E. festivoides* occurs only in the southeastern United States; northern material, including AB populations, was recently described as *E. alapallida* (Pogue and Sullivan 2003).

1901 ***Protoperigea anotha*** – In addition to two old collections by K. Bowman at Hillcrest and Banff, *P. anotha* has been found recently in dry montane habitat from Waterton Lakes National Park to Jasper.

1902 ***Protoperigea posticata*** – Known in AB from several recent (2005) collections in the arid grasslands region.

1903 ***Caradrina morpheus*** – This immigrant from the Palaearctic was first collected in AB in 2004 at both Taber and Edmonton by GGA. It has since become fairly common in Edmonton.

1905 ***Caradrina montana*** – Listed by Bowman (1951) as *Platyperigea extima* (Walker), recently designated as a synonym of this Holarctic species (Kononenko et al. 1989).

Darker, more strongly marked AB specimens superficially resemble *C. multifera* (Walker), but both structural and mtDNA barcode data indicate that AB material is all *C. montana* (GGA, unpublished data).

1906 ***Proxenus miranda*** – The series of *Proxenus* in Bowman's collection in the UASM, identified and reported as *P. miranda nitens* Dyar, is comprised of a mixed series of *P. miranda* and *P. mendosa* McDunnough.

1907 ***Proxenus mendosa*** – Although Bowman (1951) did not list this species, his series of *P. miranda* (Grote) in the UASM contained specimens of both species (see note 1906 on the latter species).

1910.1 ***Nedra hoeffleri*** – This species was described from Glacier National Park, MT, and probably will be found in adjacent Waterton Lakes National Park.

1910.2 ***Apamea verbascoides*** – This species is found in south-central SK (Fort Qu'Appelle) and may occur in eastern AB.

1912 ***Apamea vultuosa*** – Includes *multicolor* (Dyar), a recently designated synonym (Mikkola et al. 2009).

1914 ***Apamea alia*** – Includes the synonym *rorulenta* (Smith), described from Calgary, AB.

1915 ***Apamea indocilis*** – although Kononenko et al. (1989) synonymized this taxon under *remissa* Hübner, Mikkola et al. (2009) provide evidence that the two are in fact separate species, with *remissa* occurring in AK and Eurasia, and *indocilis* elsewhere in North America. The synonyms *ferens* (Smith) and *enigra* (Smith) were described from Calgary and the head of Pine Creek (near Calgary), respectively; the taxon *ampliata* (McDunnough) was recently designated as a synonym by Mikkola et al. (2009).

1917 ***Apamea unita*** – The only AB record of this rarely collected moth is the type specimen from the head of Pine Creek, near Calgary.

1918 ***Apamea sordens*** – Listed until recently under the name *finitima* Guenée, now considered to be a subspecies of this Holarctic species (Mikkola et al. 2009). The synonym *cerivana* (Smith) was described from Calgary.

1919 ***Apamea inordinata*** – Populations in AB are referable to subspecies *semilunata* (Grote), a recently designated subspecies (Mikkola et al. 2009). Disjunct populations occur in the Peace River area.

1921 ***Apamea lignicolorata*** – Includes the recently designated synonym *quaesita* (Grote) (Mikkola et al. 2009).

1922 ***Apamea antennata*** – First collected in AB in 2005 at Waterton Lakes National Park by GGA and BSC.

1922.1 ***Apamea atrosuffusa*** – This species occurs in northern MT and may occur in southern AB.

1923 ***Apamea sora*** – This species was listed by Bowman (1951) as *Septis auranticolor* (Grote), subspecies *sora* Smith and *barnesii* Smith (the latter misspelled as "*barnesi*"). *Apamea auranticolor* is now considered to be a distinct species, very closely related to *A. sora*, that does not occur north of the Yellowstone area of southern MT. The taxon *barnesii* (Smith) is a synonym of *A. auranticolor* (Mikkola et al. 2009). The type locality of *A. sora* is the head of Pine Creek, near Calgary..

1924 ***Apamea commoda*** – Bowman (1951) listed *Septis* [=*Apamea*] *commoda* and *S. parcata* (Smith) as separate species. They have been shown to be distinct via genetic barcoding data (GGA, unpublished. data), but Mikkola et al. (2009) treats *parcata* as a subspecies of *A. commoda*. They greatly resemble each other and both appear to have dark, light, and intermediate forms. The synonyms *alberta* (Smith) and *illustra* (Smith) were

described from Calgary and High River, AB, respectively. Bowman's (1951) erroneous record of *A. cinefacta* (Grote) is based on pale specimens of *A. commoda*.

1925 ***Apamea centralis*** – Recently (2005) discovered in Waterton Lakes National Park by GGA and BSC.

1927 ***Apamea amputatrix*** – Bowman (1951) listed this species under the synonyms *arctica* (Freyer) and *castanea* Grote, the latter recently designated as such (Mikkola et al. 2009).

1927.1 ***Apamea acera*** – This species occurs in northern MT and may occur in southern AB.

1928 ***Apamea burgessi*** – Known in Canada only from Writing-On-Stone Provincial Park, Lethbridge, and Taber. AB material is referable to subspecies *leucoptera* Mikkola. The synonyms *ona* (Smith) and *stygia* (Dyar) were recently designated as such (Mikkola et al. 2009).

1930 ***Apamea scoparia*** – North American populations of this species were long treated as part of a Holarctic concept of *A. lateritia* (Hufnagel) but were recently recognized as a separate species (Mustelin et al. 2000). The taxon *gabrieli* Mikkola and Mustelin is a recently designated synonym (Mikkola et al. 2009).

1931 ***Apamea cogitata*** – This species was treated by Bowman (1951) and other early workers as a subspecies of *A. dubitans* (Walker), but *A. cogitata* is now recognized as being a full species. *Apamea dubitans* is an eastern species not known to occur west of MB (Lafontaine and Troubridge 1999; Mikkola et al. 2009).

1932 ***Apamea inficita*** – This species was listed by Bowman (1951) as *Agroperina indela lineosa* Smith and *A. indela pendina* Smith. The taxon *indela* (Smith) is now considered to be a subspecies of *A. inficita*, and *lineosa* and *pendina* are synonyms of it (Mikkola et al. 2009). Both *lineosa* and *pendina* were described from Calgary.

1932.1 ***Apamea lutosa*** – This species is known from both MB and BC and may occur in AB.

1934 ***Apamea zeta*** – This species was traditionally treated as *Crymodes* [= *Apamea*] *exulis* (Duponchel) or *A. maillardi* (Geyer). The latter is a valid species which, as currently delimited, is confined to the Palaearctic; the former was once considered a subspecies of *A. maillardi* but is now considered to be a subspecies of *A. zeta* (Mikkola et al. 2009). Bowman (1951) listed *A. zeta* as *Crymodes maillardi alticola* Smith, and as *Protagrotis nichollae* Hampson. *A. alticola* was once considered to be a subspecies of *A. zeta*, but is now considered to be a distinct species that is restricted to the southern Rocky Mountain states of CO and NM (Mikkola et al. 2009). The taxon *nichollae* is now considered to be a subspecies of *A. zeta*, and is the subspecies that occurs in AB. Bowman's "*C. maillardi alticola*" are true *A. zeta*, however his "*P. nichollae*" specimens are actually misidentified specimens of *Pronoctua craboi* Lafontaine, see note 2367 on that species.

1935 ***Apamea contradicta*** – The type locality of this species is Calgary, AB.

1936 ***Apamea niveivenosa*** – This species was listed by Bowman (1951) as *A. niveivenosa* and as *Protagrotis extensa* Smith, the latter is a recently synonymized dark form of *A. niveivenosa* (Mikkola et al. 2009). Another recently designated synonym of *A. niveivenosa* is *obscuroides* Poole; the type locality of synonym *flavistriga* (Smith) is Lethbridge.

1937 ***Lateroligia ophiogramma*** – This Palaearctic species was first detected in North America at Langley, BC, in 1989 (Troubridge et al. 1992) and then in VT and NY in 1991 (Mikkola and Lafontaine 1994). It is currently known in AB from a single specimen collected at Gull Lake by J. H. Acorn in 2008, but it will probably spread through marsh and shoreline areas in AB as it has in other parts of North America.

1939 ***Eremobina claudens*** – Listed by Bowman (1951) as subspecies *albertina* Hampson, a synonym of *E. claudens* (Lafontaine and Schmidt in press).

1940 ***Eremobina leucoscelis*** – Specimens identified as *E. jocasta* (Smith), a recently designated synonym of *E. leucoscelis* (Lafontaine and Schmidt in press), are provisionally included in the provincial fauna as *E. leucoscelis*, but this arrangement needs further study. The two taxa can be separated by wing markings and extent of serration of the male antennae. A single specimen from Elkwater, Cypress Hills may represent a third species.

1940.1 ***Oligia modica*** – This species is known from Saskatoon, SK, and may occur in eastern AB.

1942 ***Oligia rampartensis*** – Listed by Bowman (1951) as *O. violacea* (Grote); western populations are recognized as *O. rampartensis*, herein revised in status as a distinct species (see entry A28 in the Appendix). True *O. violacea* does not occur in AB.

1943.1 ***Oligia obtusa*** – Occurs in central SK and may also be present in southeastern AB.

1946 ***Neoligia subjuncta*** – Listed by Bowman (1951) as a subspecies of *N. tonsa* (Grote). The type locality of *subjuncta* is Calgary. See also note 1947 on *N. tonsa*.

1947 ***Neoligia tonsa*** – Until recently, *N. subjuncta* (Smith) was treated as a subspecies of *N. tonsa*. Most or all previous reports of *N. tonsa* in AB (e.g., Bowman 1951) refer to *N. subjuncta,* including all specimens in Bowman's material in the UASM. *Neoligia tonsa* has been collected in AB only recently, in montane habitat in the extreme southwest corner of AB and at Writing-On-Stone Provincial Park.

1948 ***Neoligia lillooet*** – Recently (2006) collected in Waterton Lakes National Park by BCS, GGA, and J. J. Dombroskie. This species is known otherwise only from the type locality (Lillooet, BC).

1949 ***Neoligia invenusta*** – This recently described species is known in AB from a single specimen collected in Waterton Lakes National Park in 2008 by GGA.

1949.1 ***Xylomoia chagnoni*** – This species occurs in central Canada west to Saskatoon, SK, and may occur in southeastern AB.

1950 ***Photedes includens*** – Previously placed in the genus *Spartiniphaga*; generic combination follows Lafontaine and Schmidt (in press).

1951 ***Photedes inops*** – Previously placed in the genus *Spartiniphaga*; generic combination follows Lafontaine and Schmidt (in press). AB populations occur in both buff and pink forms.

1952 ***Photedes panatela*** – Previously placed in the genus *Spartiniphaga*; generic combination follows Lafontaine and Schmidt (in press). Known in AB only from a few specimens collected by K. Bowman before 1950.

1953 ***Photedes didonea*** – Recorded in Canada only from Writing-On-Stone Provincial Park and Lethbridge. This species was transferred from *Xylomoia* to *Chortodes* by Mikkola (1998), and *Chortodes* was subsequently synonymized by Zilli et al. (2005).

1954 ***Hypocoena inquinata*** – generic combination follows Lafontaine and Schmidt (in press); previously placed in *Chortodes*.

1955 ***Hypocoena basistriga*** – generic combination follows Lafontaine and Schmidt (in press); previously placed in *Chortodes*.

1957 ***"Photedes" defecta*** – previously placed in the genus *Chortodes*, which was synonymized by Zilli et al. (2005); however, *defecta* belongs neither to *Hypocoena* nor *Photedes*, but is provisionally placed in *Photedes* following Lafontaine and Schmidt (in press).

1958 ***Capsula oblonga*** – This species was placed until recently in the genus *Archanara*, but the North American taxa *laeta* (Morrison), *oblonga,* and *sublflava* (Grote) belong

in the recently described genus *Capsula* Fibiger, Zilli, Ronkay and Goldstein (Zilli et al. 2005).

1960 ***Helotropha reniformis*** – This species occurs in two very different forms; the dark form was named *atra* (Grote).

1961 ***Amphipoea interoceanica*** – The only *Amphipoea* species that Bowman (1951) listed for AB was *A. interoceanica*, and all the specimens of *Amphipoea* in his collection were placed under *interoceanica*. However, all but one or two specimens in his collection at the UASM have been re-identified as *A. americana* (Speyer). *Amphipoea interoceanica* occurs in AB but is much less common than *A. americana*. *Amphipoea interoceanica* has been reported as a pest of commercial strawberries in MB (Ayre 1980).

1962 ***Amphipoea americana*** – See note 1961 on *A. interoceanica*.

1964 ***Papaipema birdi*** – This species was reported by Bowman (1951) as *P. marginidens* (Guenée); *P. birdi* was considered to be a synonym of it at the time. *Papaipema marginidens* is not known to occur in Canada.

1965 ***Papaipema maritima*** – The first Canadian and AB specimen, a freshly emerged male, was collected in southern AB on 2 October 2008 by J. J. Dombroskie and T. J. Simonsen.

1966 ***Papaipema unimoda*** – All AB specimens that we have examined lack the white spots present in most eastern specimens we have seen.

1967 ***Hydraecia pallescens*** – The genus *Hydraecia* is poorly understood and is currently being revised by L. Crabo.

1969 ***Hydraecia intermedia*** – Known globally only from the holotype from Calgary. We reluctantly continue to recognize *H. intermedia* herein as a species, pending more detailed examination.

1970 ***Bellura gortynoides*** – Known in AB only from two specimens collected in the Edmonton area in the first half of the last century (Bowman 1951).

1972 ***Hyppa contrasta*** – Reported by Bowman (1951) and others as *H. xylinoides* (Guenée). The genus *Hyppa* was recently revised by Troubridge and Lafontaine (2004) and western Canadian material previously identified as *H. xylinoides* has been corrected to *H. contrasta*. *Hyppa xylinoides* does not occur west of MB; see also note E152 on *H. xylinoides* in the Excluded List section.

1973 ***Hyppa brunneicrista*** – Type locality: head of Pine Creek (near Calgary).

1979 ***Xylena brucei*** – This species was reported from AB by Crumb (1956), but the whereabouts of voucher specimens is unknown. This species is known with certainty from eastern BC at Brilliant.

1980 ***Lithomoia germana*** – Traditionally treated as *L. solidaginis* (Hübner), a Palaearctic species. North American populations were recently recognized as a separate species (Kononenko et al. 1989). Bowman (1951) listed *L. germana* as *L. solidaginis albertae* (Strand).

1983.1 ***Lithophane bethunei*** – This is an eastern species, known as far west as central SK; it may also occur in eastern AB.

1985 ***Lithophane petulca*** – Listed by Bowman (1951) and Prentice (1962) under the name *ferrealis* Grote, a form of *L. petulca*.

1987 ***Lithophane disposita*** – In addition to specimens from the southern boreal forest region, Bowman (1951) listed a record from Lethbridge, but we have not seen the specimen.

1989.1 ***Lithophane laticinerea*** – This is an eastern species that occurs west to Shoal Lake, SK, and may occur in eastern AB.

1990 ***Lithophane unimoda*** – This species was recently collected in dry wooded areas in east-central AB and previously misidentified in collections as *L. georgii* Grote or *L. grotei* Riley.

1993 ***Lithophane adipel*** – Known in AB only from a single recent collection by GGA from Jack Pine forest and dunes in the Redwater area.

1995 ***Eupsilia vinulenta*** – This species was not listed by Bowman (1951) but was subsequently found at a number of sites in the parklands region.

1998 ***Epiglaea decliva*** – Known in AB only from a historic series from Lethbridge. Bowman (1951) did not list this species but did list *Metaxaglaea* (= *Sericaglaea*) *signata* French as occurring in September and October at Lethbridge, and we conclude that his report of *S. signata* refers to the *E. decliva* specimens.

2000 ***Mesogona olivata*** – Known in AB only from two old specimens from Lake Louise.

2001 ***Sunira bicolorago*** – Although Bowman (1951) recorded this species from Medicine Hat, he did not record it from Edmonton (or elsewhere), where it is now very common. This species may have spread with urban and shelterbelt plantings across AB after the drought of the 1930s.

2005 ***Xanthia tatago*** – This species was traditionally treated as *Xanthia togata* (Esper), which is strictly a Palaearctic species. Bowman (1951) listed it as *X. lutea* (Ström), a synonym of *X. togata*.

2011 ***Brachylomia cascadia*** – A series of this recently described species was collected in Waterton Lakes National Park in 2005 and 2006 by GGA and BSC.

2012 ***Parastichtis suspecta*** – North American populations have traditionally been treated as *P. discivaria* (Walker), a recently designated synonym of this Holarctic species.

2015 ***Epidemas obscurus*** – Listed by Bowman (1951) as *E. melanographa* Hampson. This genus is poorly understood and in need of revision. Until such time, *E. obscurus* appears to be the best name to apply to the AB species, and we have placed *E. melanographa* is in the Excluded Taxa section (E143).

2018 ***Zotheca tranquilla*** – This species was reported from AB by Crumb (1956), but we have not seen any voucher material; specimens may be in the USNM. Confirmed records exist for this species in BC, and there is no reason to doubt its occurrence in the mountains and foothills of AB where elderberry (*Sambucus* spp.; Caprifoliaceae), its host plant, is found.

2020 ***Enargia infumata*** – Due to misunderstood taxonomic concepts of the species *E. infumata* and *E. mephisto*, the latter species was removed from the provincial list after having been reported for AB in CBIF (2003). A revision of the genus (Schmidt in press) shows that two species do occur in AB, namely *E. infumata* (which includes previous concepts of *E. mephisto*) and a new species near *E. infumata*. These taxonomic changes occured too late to fully incorporate both species in this manuscript. See also note E147 in the Excluded Taxa section.

2021 ***Ipimorpha pleonectusa*** – Pale specimens from the grasslands region were reported by Bowman (1951) as *I. subvexa* Grote. We are unable to find specific differences between *I. pleonectusa* and these paler prairie populations, and we treat AB *Ipimorpha* specimens as a single species. See also note E153 in the Excluded Taxa section on *I. subvexa*.

2023 ***Andropolia aedon*** – Known in AB only from the mountains south of the Crowsnest Pass.

2024 ***Andropolia theodori*** – Known in AB only from recent collections at Waterton Lakes National Park by GGA and BSC.

2027 ***Cerapoda stylata*** – Known in Canada only from the Lost River and lower South Saskatchewan River areas.

2029 ***Fishia yosemitae*** – Bowman (1951) listed this moth as both *F. instruta* Smith and *F. enthea* Grote, which we treat as a single species (see entry A29 in the Appendix).

2033 ***Xylotype arcadia*** – This species has traditionally been treated as *X. capax* (Grote), a species found in eastern United States. All Canadian material has been revised to *X. arcadia*, and the name has been corrected from the widely used "*acadia*" to the original spelling of *arcadia* (Lafontaine 1998). Prentice (1962) reported this species in AB as both *X. capax* and "*X. acadia*."

2034 ***Dryotype opina*** – Reported from AB by Crumb (1956). We know of no voucher specimens, but they may exist in the USNM. There is no reason to doubt that this species occurs in AB; it is known from BC.

2035 ***Mniotype ducta*** – This species was listed by Bowman (1951) and Crumb (1956) under the name *versuta* (Smith), herein revised as a synonym of *M. ducta* (see entry A31 in the Appendix).

2036 ***Mniotype tenera*** – Listed by Bowman (1951) and Prentice (1962) under the name *miniota* (Smith), here revised as a synonym of *M. tenera* (see Appendix entry A32).

2037 ***Sutyna privata*** – Bowman (1951) and others have referred to this species under the name *profundus* (Smith), a new synonym of *S. privata* (see Appendix entry A30).

2039 ***Ufeus plicatus*** – The unusual summer flight, in addition to the late fall – early spring sequence, suggests there is more than one species involved. More material and study are needed.

2040.1 ***Pseudobryomima muscosa*** – This species occurs in BC east to Kaslo and may occur in adjacent southwestern AB.

2041 ***Pseudanarta crocea*** – This species was first collected in AB in 2000 along the lower reaches of the Saskatchewan River by GGA and J. Troubridge and has since been collected at several additional sites in the arid grasslands region by GGA.

2041.1 ***Magusa divaricata*** – Occurs as a regular subtropical migrant in eastern and central Canada, with records as far north and west as near The Pas, MB (specimens in the CNC). North American material has been previously known as *M. orbifera* (Walker), which is restricted to the Caribbean (Lafontaine et al. in press).

2041.2 ***Acerra normalis*** – Occurs in BC east to Mount Robson and probably occurs in adjacent AB.

2043.1 ***Orthosia pulchella*** – Occurs in the Kootenays in BC and probably will be found in adjacent AB.

2045 ***Orthosia segregata*** – Treated by McCabe (1980) at the end of his revision of the *Polia* complex, as *"Polia" segregata*.

2048 ***Egira variabilis*** – We have seen only two specimens from AB, both reared from larvae on Limber Pine, collected by personnel of the Forest Insect and Disease Survey of the Canadian Forest Service at Burmis.

2048.1 ***Egira curialis*** – This species is found in southern BC and southwestern SK and thus almost certainly occurs in southern AB as well.

2051 ***Morrisonia evicta*** – Known in AB from a single specimen collected by GGA in 2000 from the lower South Saskatchewan River valley, south of Empress.

2055 ***Afotella cylindrica*** – The wide range of collection dates indicates this moth has several broods or a very extended emergence.

2056 ***Hadenella pergentilis*** – This species is double brooded or has an extended emergence.

2057 ***Anarta nigrolunata*** – This name is applied herein to North American material previously identified as *A. melanopa* (Thunberg). *Anarta melanopa* is restricted to the Palaearctic (see entry A33 in the Appendix).

2059.1 ***Anarta hamata*** – This species occurs in southwestern SK (Cypress Hills) and southern BC and will almost certainly be found in southern AB.

2060 ***Anarta montanica*** – Only recently formally recognized as a species distinct from *A. oregonica* (Grote) (Mustelin 2006) (see entry A34 in the Appendix). This species possibly has a partial second brood. A disjunct population is present in the Peace River district.

2061 ***Anarta columbica*** – This species was only recently formally recognized as a species distinct from *A. oregonica* (Grote) (Mustelin 2006) (see entry A34 in the Appendix). It was recently discovered in AB, in the Waterton Lakes and Beaver Mines areas.

2063 ***Anarta obesula*** – Although this species was apparently widespread in the early part of the last century (Bowman 1951), there have been few collections in AB since the 1920s.

2065 ***Anarta crotchii*** – Reported by Bowman (1951) as *Scotogramma chunka* (Smith), a recently designated synonym (Mustelin 2006).

2067 ***Anarta decepta*** – Includes *postica* (Smith), a new synonym (see entry A34 in the Appendix). Collection data suggest this species is double brooded.

2070 ***Coranarta luteola*** – North American populations traditionally treated as *Anarta* (= *Coranarta*) *cordigera* have recently been revised to species status as *C. luteola* (Grote and Robinson) (Mustelin 2006). *Coranarta cordigera* is restricted to the Palaearctic. Generic placement follows Hacker (1998).

2071 ***Coranarta macrostigma*** – This species is typically an inhabitant of the montane–boreal region, but there is a disjunct population associated with Common Bearberry (*Arctostaphylos uva-ursi* (L.) Spreng.; Ericaceae) in active dunes southeast of Wainwright, on the northern fringe of the grasslands region.

2072 ***Polia discalis*** – This is a boreal species that is largely replaced in the mountains by *P. piniae* Buckett and Bauer. Bowman's (1951) record of *P. discalis* from the mountains refers to *P. piniae*, which was not described until 1967.

2073 ***Polia piniae*** – See note 2072 on *P. discalis*.

2076 ***Polia rogenhoferi*** – Bowman (1951) also reported this species under the name *P. carbonifera* Hampson, a recently designated synonym of *P. rogenhoferi* (McCabe 1980).

2078 ***Polia richardsoni*** – Known in AB from a single Bowman specimen from Nordegg and from recent (2006) collections from Kakwa Wildland Provincial Park north of Jasper by D. A. Macaulay.

2091 ***Trichordestra rugosa*** – An eastern bog species, recently found in AB near Fort Assiniboine by D. A. Macaulay.

2093 ***Trichordestra legitima*** – A single specimen of this otherwise eastern species was collected on the north side of Lake Athabasca in 2001 by D. A. Macaulay.

2097 ***Papestra quadrata*** – Calgary is the type locality for *ingravis* (Smith), a synonym.

2098 ***Papestra biren*** – Introduced to North America in NF in the 1930s.

2100 ***Papestra brenda*** – AB records of *P. invalida* (Smith) by Bowman (1951) and Godfrey (1972) have been corrected to *P. brenda*. *Papestra invalida* is not known to occur in AB.

2104 ***Sideridis fuscolutea*** – This and several other species formerly assigned to the genus *Trichoclea* are herein transferred to the genus *Sideridis* (see entry A35 in the Appendix).

2105 ***Sideridis uscripta*** – This and several other species formerly assigned to the genus *Trichoclea* are herein transferred to the genus *Sideridis* (see entry A35 in the Appendix).

2106 ***Sideridis artesta*** – This and several other species formerly assigned to the genus *Trichoclea* are herein transferred to the genus *Sideridis* (see entry A35 in the Appendix).

2108.1 ***Admetovis oxymorus*** – Occurs in eastern BC in the Kootenays and may also occur in the extreme southwest of AB.

2112 ***Faronta diffusa*** – A disjunct population occurs in the Peace River area.

2114 ***Mythimna oxygala*** – This species was previously placed in *Aletia*, but Hacker et al. (2002) revised the concept of *Mythimna* to include *Aletia*.

2115 ***Mythimna unipuncta*** – This species was previously placed in *Pseudaletia*, but Hacker et al. (2002) revised the concept of *Mythimna* to include *Pseudaletia*.

2116 ***Leucania farcta*** – This western species is known in AB only from a single specimen collected in 2006 from Jasper by GGA and BCS.

2117 ***Leucania anteroclara*** – The pink form of this species, reported by Bowman (1951) as a separate species under the name *calgariana* Smith, is not uncommon in the southern mountains and foothills of AB. The name *anteroclara* is frequently misspelled as *anteoclara*.

2120 ***Leucania insueta*** – Records of this species up to 2008 may include *L. dia* (Grote). The record of *L. insueta* by Pohl et al. (2004b) is incorrect; all their voucher specimens have been redetermined as *L. dia*.

2121 ***Leucania dia*** – This taxon has been treated as a synonym or western subspecies of *L. insueta* Guenée but is herein revised to species status (see entry A36 in the Appendix).

2124 ***Lasionycta fergusoni*** – AB material previously listed under the name *conjugata* (Smith) belongs to this very recently described species (Crabo and Lafontaine 2009).

2125 ***Lasionycta mutilata*** – Includes the recently designated synonym *rainieri* (Smith) (Crabo and Lafontaine 2009).

2127 ***Lasionycta leucocycla*** – Listed by Bowman (1951) as both *Lasiestra* (= *Lasionycta*) *staudingeri* (Aurivillius) (a misidentification) and *L. leucocycla albertensis* (McDunnough). Subspecies *albertensis* (type locality: Nordegg) occurs in AB but the species *Lasionycta staudingeri* is restricted in Canada to QC and the high arctic.

2128 ***Lasionycta anthracina*** – This species is known in AB only from two specimens, one collected near Lac la Biche in 1994 by GRP, reported in error in Pohl et al. (2004b) as *L. poca* (Barnes and Benjamin). There is a second specimen from Ft. McMurray in the CNC. *Lasionycta anthracina* is otherwise known in Canada only as far west as ON. This species has been referred to for many years under the name *L. albinuda* (Smith), but that name is now known to be a synonym of *L. phoca* (Möschler), an eastern Canadian species (Crabo and Lafontaine 2009).

2129 ***Lasionycta poca*** – Listed by Bowman (1951) and Lafontaine et al. (1986) as a subspecies of *L. leucocycla* (Staudinger). The taxon *poca* (type locality: Pocahontas, AB) has been very recently recognized as a species separate from *L. leucocycla* (see Crabo and Lafontaine 2009). The record by Pohl et al. (2004b) is erroneous; it is referable to *L. anthracina* Crabo and Lafontaine.

2131 ***Lasionycta perplexa*** – Reported by Bowman (1951) under the name *alberta* Barnes and Benjamin, recently designated as a synonym of *L. perplexa* (Crabo and Lafontaine 2009). The synonym *marloffi* (Dyar) was also recently designated by Crabo and Lafontaine (2009). Older literature records may include *L. perplexella* Crabo and Lafontaine, which was not described until 2009..

2133 ***Lasionycta subfuscula*** – Known in AB only from old collections from Hillcrest, and a recent collection from Kakwa Wildland Provincial Park. This AB material is referable

to the very recently described subspecies *livida* Crabo and Lafontaine. The taxon *sedilis* (Smith) was designated recently as a synonym (Crabo and Lafontaine (2009).

2135 ***Lasionycta lagganata*** – Type locality: Laggan [= Lake Louise] AB.

2136 ***Lasionycta uniformis*** – The name *uniformis* has been applied to more than one species in this difficult group, and literature records for *L. uniformis* may refer to one or more species, including *L. uniformis*.

2138 ***Lasionycta promulsa*** – *Lasionycta promulsa* was recently revised to include *L. infuscata* as a synonym (Crabo and Lafontaine 2009).

2144 ***Lacinipolia cuneata*** – Reported from AB by Crumb (1956) and Godfrey (1972), but no AB vouchers are known for this species. *Lacinipolia cuneata* is otherwise known in Canada only from BC.

2147 ***Lacinipolia naevia*** – Recent collections at several sites in southeastern AB by C. D. Bird, GGA, and BCS are the first reports of this species for Canada and extend the known range north from WY to the Red Deer River at Dry Island Buffalo Jump Provincial Park, AB.

2148 ***Lacinipolia vicina*** – Populations of *L. "vicina"* in the extreme south of AB (Waterton, Taber, and Writing-On-Stone Provincial Park) are larger and paler than those from the rest of AB, and on the basis of preliminary morphological and genetic barcode data they appear to belong to a separate species. However, we do not list them as a separate species entry, pending further research on western populations in the *L. vicina* and *L. pensilis* (Grote) groups.

2154 ***Lacinipolia comis*** – Several specimens collected in Waterton Lakes National Park in August 2006 by GGA and BCS are the first AB records.

2155 ***Lacinipolia davena*** – Listed by Bowman (1951) as a subspecies of *L. olivacea* (Morrison). Bowman reported *L. davena* from the Edmonton ("zone 10") and Waterton Lakes ("zone 18") regions. We have been unable to locate any Bowman specimens but have recently found this taxon to be common in Waterton Lakes National Park. Bowman's report of this western montane species from Edmonton is almost certainly based on a misidentified specimen of *L. olivacea*.

2156 ***Lacinipolia strigicollis*** – Known in AB from collections from Writing-On-Stone Provincial Park and Medicine Hat by GGA and J. A. Scott.

2158 ***Homorthodes furfurata*** – Bowman (1951) listed AB specimens as subspecies *uniformis* Smith.

2158.1 ***Homorthodes discreta*** – This species is known from Kaslo, BC, and may also occur in the extreme southwest of AB.

2159 ***Protorthodes curtica*** – Known in AB only from an old collection from "Manyberries." Most historic "Manyberries" records are actually from the Agriculture Canada Onefour Research Substation (J. D. Lafontaine, personal communication).

2160 ***Protorthodes incincta*** – Previously reported (Bowman 1951) under the name *utahensis* (Smith), a new synonym (see entry A37 in the Appendix).

2161 ***Protorthodes eureka*** – The only known Canadian population of *P. eureka* is in Dinosaur Provincial Park, AB. This species was previously treated under the name *akalus* (Strecker) (e.g., Hooper 1993), herein synonymized with *P. incincta* (Morrison) (see entry A37 in the Appendix).

2163 ***Ulolonche disticha*** – Known in Canada only from Writing-On-Stone Provincial Park.

2165 ***Orthodes goodelli*** – Treated by McCabe (1980) at the end of his revision of the *Polia* complex, as *"Polia" goodelli*.

2166 ***Orthodes obscura*** – Treated by McCabe (1980) at the end of his revision of the *Polia* complex, as *"Polia" obscura*.

2167 ***Orthodes majuscula*** – Listed until recently under the name *crenulata* (Butler), a recently designated synonym (Becker 2002).

2167.1 ***Orthodes cynica*** – This species has been reported from central SK (Pike Lake) and may occur in eastern AB.

2168 ***"Polia" detracta*** – This species is not congeneric with true *Polia* and awaits a better generic and tribal placement.

2169 ***Zosteropoda hirtipes*** – Known in AB from a single specimen from Waterton Lakes National Park collected in 2005 by GRP.

2170 ***Neleucania bicolorata*** – Known in AB from two recent (2000, 2001) specimens, from the Lost River valley and Cypress Hills Provincial Park.

2171 ***Hydroeciodes serrata*** – Recent collections (2005, 2006) in Waterton Lakes National Park, AB, are the first Canadian records for this species.

2172 ***Peridroma saucia*** – Widely distributed globally. This species is an annual immigrant from the south that is unable to overwinter in AB. Migrants appear in AB in spring and their fresh offspring appear in fall.

2173 ***Anicla exuberans*** – Listed by Bowman (1951) as *Euagrotis bairdi* Smith, a recently designated synonym (Lafontaine 2004).

2177 ***Dichagyris grotei*** – Known in Canada from a single fresh specimen collected in Waterton Lakes National Park in 2006 by BCS, GGA, and J. J. Dombroskie.

2179 ***Copablepharon longipenne*** – A sand dune specialist, this species is currently known in AB from three sites. This species has been assessed as "endangered" by the Committee on the Status of Endangered Wildlife in Canada and is currently being considered for protected status under the Species At Risk Act (COSEWIC 2009a).

2180 ***Copablepharon grandis*** – Found associated with sand, including stabilized dunes. This species has been assessed as being of "special concern" by Committee on the Status of Endangered Wildlife in Canada and is currently being considered for protected status under the Species At Risk Act (COSEWIC 2009a).

2181 ***Copablepharon viridisparsa*** – Type locality: Lethbridge, AB. This species requires sand or otherwise loose soils for reproduction.

2184 ***Protogygia querula*** – Type locality: Red Deer River, northeast of Gleichen, AB. A disjunct population occurs in the Peace River region.

2185 ***Protogygia alberta*** – This recently described species (Lafontaine 2004) is known globally only from the type locality (the Lost River valley in southern AB), where it was first collected in 1996 by GRP, and from a single specimen collected in 2007 in the Red Deer River badlands north of Jenner, AB.

2186 ***Protogygia pallida*** – Listed by Bowman (1951) and Seamans (1925) as *Copablepharon* (= *Protogygia*) *album* Harvey and only recently recognized as distinct (Lafontaine 2004). *Protogygia album* is found only in the western United States, as far east as UT and AZ. *Protogygia pallida* is known in AB only from historical records from Lethbridge; in Lafontaine (2004) this locality was omitted from the map but was mentioned in the text.

2188 ***Euxoa adumbrata*** – The nomenclature of this species has been very unstable; this species has been placed in genus or subgenus *Chorizagrotis* by various authors and has gone under the species names *lidia* (Stoll), *adumbrata* (Eversmann), and *thanatologia*

(Dyar). We treat the western North American taxon as *E. adumbrata thanatalogia* (see entry A38 in the Appendix).

2189 ***Euxoa auxiliaris*** – This is a very destructive cutworm pest. Adults of *E. auxiliaris* fly to the Rocky Mountains each summer to aestivate before returning to the grasslands to lay eggs later in the fall. In the mountains, the adults gather in large numbers under rocks and can be an important food for bears (Chapman et al. 1955).

2190 ***Euxoa shasta*** – Known in AB from several recently collected (2005–2008) specimens from Waterton Lakes National Park.

2191 ***Euxoa mimallonis*** – AB populations are referable to the nominate subspecies.

2192 ***Euxoa septentrionalis*** – The only confirmed AB record is a single female in the Bowman collection in the UASM from Hillcrest; Bowman's (1951) records for the Lethbridge area are based on two misidentified specimens of *E. messoria* (Harris).

2194 ***Euxoa messoria*** – A common climbing cutworm and agricultural pest.

2197 ***Euxoa edictalis*** – This species has an unusually early flight period for *Euxoa*. Known in AB only from a single collection of three specimens from the Red Deer River valley at Emerson Bridge in 2002 by D. A. Macaulay.

2199 ***Euxoa quebecensis*** – In addition to the normal gray form, a rare red form has also been collected in AB.

2200 ***Euxoa scandens*** – Typically found in sandy habitats; most specimens are of the gray form but a pink form also occurs.

2202 ***Euxoa vallus*** – AB populations are referable to the nominate subspecies.

2203 ***Euxoa lewisi*** – AB populations are referable to the nominate subspecies.

2204 ***Euxoa tristicula*** – The type locality for the form *nesilens* Smith is "head of Pine Creek" near Calgary.

2205 ***Euxoa atomaris*** – The sole AB record is from the head of Pine Creek (Hardwick 1970a).

2210 ***Euxoa perexcellans*** – Known in AB from a single recent (2005) record from Waterton Lakes National Park.

2211 ***Euxoa rufula*** – AB material is referable to subspecies *basiflava* (Smith).

2214 ***Euxoa setonia*** – Specimens of *E. setonia* in the Bowman collection in the UASM had been misidentified as *E. quinquelinea incallida* Smith, a synonym of *E. comosa lutulenta* (Smith).

2217 ***Euxoa silens*** – The sole AB record is from Lethbridge.

2220 ***Euxoa tessellata*** – The type locality of the syononym *nordica* (Smith) is Calgary.

2222.1 ***Euxoa hollemani*** – This species occurs in BC and Malta, MT; it may occur in adjacent AB.

2224 ***Euxoa comosa*** – Bowman (1951) listed *E. comosa* sensu Lafontaine under the names *E. ontario* (Smith), *E. altera* McDunnough, *E. quinquelinea lutulenta* (Smith), *E. quinquelinea incallida* (Smith), *E. atropulverea* (Smith) (misspelled as *atropulvaria*), *E. vulpina* (Smith), and *E. fumalis* (Grote). The taxa *ontario*, *altera*, and *lutulenta*, all of which occur in AB, are currently recognized as subspecies of *E. comosa*. The names *incallida* and *atropulverea* are syononyms of *E. comosa*. *Euxoa fumalis* is a valid species in eastern North America; AB specimens labeled as *E. fumalis* in the Bowman collection in the UASM were misidentified *E. comosa*. The taxon *quinquelinea* (Smith) is now treated as a synonym of *E. extranea* (Smith) (Franclemont and Todd 1983), a valid species that does not occur in Canada. Reports of *E. extranea* in AB are erroneous, probably owing to the previous arrangement.

2227 ***Euxoa cursoria*** – Known in AB from the northern Rocky Mountains and the Lake Athabasca sand dunes. North American populations are referable to subspecies *wirima* Hardwick.

2228 ***Euxoa ochrogaster*** – AB populations are referable to the nominate subspecies. *Euxoa ochrogaster* is one of the most economically important pest species of *Euxoa* in North America.

2231 ***Euxoa choris*** – A disjunct population occurs in the Peace River area.

2232.1 ***Euxoa oberfoelli*** – This species is found in southwestern SK and may occur in southeastern AB.

2235 ***Euxoa idahoensis*** – Listed by Bowman (1951) as *E. costata idahoensis*. *Euxoa costata* (Grote) is not known to occur in AB. *Euxoa idahoensis* as defined until recently (Lafontaine 1987) is a complex of several species, two or more of which occur in AB (J. D. Lafontaine, personal communication). One of these is *E. furtivus* (Smith) (see entry A39 in the Appendix). *Euxoa idahoensis* is a dark gray species that is more or less restricted to the mountains and foothills. Records of *E. idahoensis* from before Lafontaine (1987) may refer to *E. idahoensis*, *E. furtivus*, or one of the undescribed species in the complex.

2236 ***Euxoa furtivus*** – This taxon is herein revised to full species status (see entry A39 in the Appendix); it was previously lumped with *E. idahoensis* (Grote) (Lafontaine 1987).

2237 ***Euxoa clausa*** – Type locality: Lethbridge, AB.

2239 ***Euxoa servitus*** – Bowman's (1951) records under this name refer to both *E. servitus* and the more recently described *E. auripennis* Lafontaine (Lafontaine 1974).

2240 ***Euxoa auripennis*** – AB populations are referable to the nominate subspecies. This species had not been described at the time of Bowman (1951) but was present in his collection in the UASM, misidentified as *E. redimicula* (Morrison), an eastern species that does not occur in AB.

2248 ***Euxoa murdocki*** – Known in AB from a single historic specimen from Banff.

2249 ***Euxoa dodi*** – Type locality: Lethbridge, AB.

2252 ***Euxoa quadridentata*** – AB populations are referable to the nominate subspecies.

2252.1 ***Euxoa unica*** – An enigmatic moth, known globally from only two specimens from central SK (Saskatoon) and possibly of hybrid origin (Lafontaine 1987). If this is a valid species, it could occur in east-central AB.

2255 ***Euxoa detersa*** – AB populations are referable to subspecies *personata* (Grote). This species is a sand specialist that can be a crop pest in sandy soils.

2257 ***Euxoa aequalis*** – Bowman (1951) listed this species under the name *acornus* (Smith), now considered to be a subspecies (type locality: Calgary, AB). Subspecies *alko* (Strecker) is also present in AB. The taxa *testula* (Smith) and *megastigma* (Smith), also decribed from Calgary, are now treated as synonyms of *E. aequalis* (Lafontaine 1987).

2257.1 ***Euxoa cona*** – This species is known from western ND and Malta, MT (Hooper 1994); it probably occurs in southeastern AB.

2262 ***Euxoa mitis*** – A specimen from Edmonton in the UASM collected by K. Bowman is an unusual record for this species, which is otherwise restricted to the shortgrass prairie region.

2263 ***Euxoa nomas*** – Reported by Bowman (1951) under the name *incognita* (Smith), now considered to be a subspecies of the Holarctic species *E. nomas*. The type locality of *incognita* is Lake Louise, AB.

2267 ***Euxoa perpolita*** – A sand specialist.

2268 ***Euxoa taura*** – A disjunct population occurs in the Peace River district. This species was listed by Bowman (1951) under the name *cooki* McDunnough, a recently designated synonym (Lafontaine 1987).

2270 ***Euxoa maimes*** – Before 1985, this species was treated as a synonym of *E. ridingsiana* (Grote). Individual specimens may be impossible to identify with any degree of certainty. The type locality of *maimes* is "head of Pine Creek," near Priddis, AB.

2271 ***Euxoa ridingsiana*** – Records before 1985 may refer to either *E. ridingsiana* or *E. maimes* (Smith) (see note 2270 on the latter species).

2273 ***Feltia nigrita*** – Listed by Bowman (1951) as *Trichosilia* (= *Feltia*) *acarnea* (Smith), a recently designated synonym of this Holarctic species (Lafontaine 2004).

2274 ***Feltia jaculifera*** – Listed by Bowman (1951) under the names *ducens* Walker and *hudsoni* Smith, which are both recently designated synonyms (Lafontaine 2004). The type locality of *hudsoni* is Calgary, AB. Canadian populations of *F. jaculifera* are a complex of several pheromone races, at least one of which may be distinct enough to be considerd a separate species (Byers et al. 1990; Lafontaine 2004).

2274.1 ***Feltia subgothica*** – This species occurs in northwestern ID and southern SK and may occur in AB.

2274.2 ***Feltia tricosa*** – This species occurs in northwestern MT and southwestern MB and probably occurs in southern AB.

2279 ***Agrotis ruta*** – Bowman (1951) listed this species under the name *patula* Walker, a recently designated synonym (Kononenko et al. 1989).

2280 ***Agrotis orthogonia*** – An outbreak of this agricultural pest triggered the creation of the first position for a professional entomologist in AB in 1913, with the appointment of E. H. Strickland to the Dominion Experimental Station in Lethbridge. This species is featured in the logo of the Entomological Society of AB.

2280.1 ***Agrotis kingi*** – This enigmatic moth, known globally only from the holotype collected in central SK, may be of hybrid origin (Lafontaine 2004). If it is a valid species, it may occur in east-central AB.

2284 ***Agrotis stigmosa*** – Reported by Bowman (1951) as a subspecies of *A. volubilis* Harvey.

2285 ***Agrotis volubilis*** – Bowman (1951) listed both *A. stigmosa* Morrison (a currently valid species) and the taxon *fumipennis* McDunnough (now considered a subspecies of *A. obliqua* (Smith)) as subspecies of *A. volubilis*. The only Bowman specimens we have seen that are true *A. volubilis* are from Edmonton.

2286 ***Agrotis obliqua*** – Bowman (1951) reported this species as *A. obliqua* and as A. *musa* (Smith), the latter a recently designated synonym (Lafontaine 2004). Bowman (1951) also listed subspecies *fumipennis* McDunnough, but as a subspecies of *A. volubilis* Harvey.

2287 ***Agrotis antica*** – The first AB specimen was collected in Waterton Lakes National Park in 2006 by BCS. *Agrotis antica* is a western species found in dry, montane habitats.

2288 ***Agrotis ipsilon*** – A seasonal migrant to AB from the south, which appears to be unable to overwinter this far north.

2289 ***Ochropleura implecta*** – Treated historically as *O. plecta* (Linnaeus), which is strictly Palaearctic. *Ochropleura implecta* was recently described as a distinct species (Lafontaine 1998).

2290 ***Diarsia calgary*** – Type locality: Calgary.

2293 ***Diarsia rosaria*** – Hardwick (1950) described AB material as *D. pseudorosaria* Hardwick and divided it into two subspecies, with nominate *pseudorosaria* in the mountains and subspecies *freemani* Hardwick in the boreal and parklands regions. Lafontaine

(1998) subsequently synonomized *pseudorosaria* with *D. rosaria* but retained the taxon *freemani* as a subspecies of *D. rosaria*.

2296 ***Hemipachnobia monochromatea*** – Although recognized as a species by Bowman (1951), *H. monochromatea* was subsequently considered to be a synonym of *H. subporphyrea* (Walker). Lafontaine (1998) again revised *H. monochromatea* to full species status. *Hemipachnobia subporphyrea* is restricted to the southeastern United States. *Hemipachnobia monochromatea* is confined to peat bogs.

2298 ***Rhyacia clemens*** – This species was considered until recently (Lafontaine 1998) to be a subspecies of *R. quadrangula* (Zetterstedt) and reported as such by Bowman (1951). *Rhyacia clemens* is the western counterpart to *R. quadrangula*, an eastern species.

2300 ***Noctua pronuba*** – This is an introduced Palaearctic species, which has rapidly spread across North America. It was first collected in AB in 2000, and in 2007 it was noted in considerable abundance for the first time.

2303 ***Spaelotis bicava*** – AB material reported as *S. havilae* (Grote) has recently been revised and described as *S. bicava* (Lafontaine 1998). *Spaelotis havilae* is restricted to the western United States. The type locality of *S. bicava* is the Dominion Range Station, Manyberries (near Onefour). A disjunct population of *S. bicava* occurs in the Peace River grasslands.

2304 ***Eurois occulta*** – AB collection data suggest there may be two broods, with peaks in early July and late August.

2307 ***Graphiphora augur*** – For many years this species was known as *G. haruspica* (Grote), which was recently designated as a synonym of the Palaearctic species *G. augur* (Lafontaine 1998). However, recent mtDNA barcode data (GGA, unpublished data) suggest that North American "*G. augur*" is a complex of several species and that AB material is not conspecific with *G. augur*. However, the name *G. augur* is retained herein pending further research.

2311 ***Eueretagrotis sigmoides*** – Known with certainty from central Canada west to south-central SK. There is an old, unconfirmed report from Calgary (Lafontaine 1998).

2316 ***Xestia plebeia*** – Known in AB from a single specimen record from the grasslands region (Lafontaine 1998). Until recently, this species was included in the genus *Hemigraphiphora*, now a synonym of *Xestia* (Lafontaine 1998).

2316.1 ***Xestia mustelina*** – Found in the extreme southeast of BC and may occur in the Crowsnest–Waterton area of AB. This and several other *Xestia* species were treated by Franclemont and Todd (1983) in *Anomogyna*, now considered to be a synonym of *Xestia* (Poole 1989).

2318 ***Xestia infimatis*** – Known in AB only from a specimen collected at Waterton Lakes National Park in 2008 by GGA.

2319 ***Xestia finatimis*** – Known in AB from a single specimen in the CNC from Pincher Creek.

2320 ***Xestia praevia*** – This taxon was recently described by Lafontaine (1998) as a species distinct from *X. elimata* (Guenée); earlier workers (e.g., Bowman 1951; Prentice 1962) reported this species as *X. elimata*, which is restricted to eastern North America.

2321 ***Xestia dilucida*** – Previously known as *X. youngii* (Smith), a junior synonym (Lafontaine and Schmidt in press). A single female was collected by BCS in a bog south of Fort McMurray, AB, in 2003. It was previously known to occur in eastern North America, west to ON and MN (Lafontaine 1998).

2322 ***Xestia c-nigrum*** – Franclemont (1980) described North American populations of the Holarctic *X. c-nigrum* as a separate species, *X. adela* Franclemont. The differences that

Franclemont noted between the two taxa are not apparent between populations in northwestern North America, and on that basis Lafontaine (1998) synonomized *adela* with *X. c-nigrum*.

2323 ***Xestia maculata*** – Type locality: Lake Louise, AB. Until recently this species was placed in the genus *Agrotiphila*, a synonym of *Xestia* (Poole 1989).

2324 ***Xestia speciosa*** – Listed by Bowman (1951) as *Anomogyna apropitia* Benjamin (type locality: Banff), now considered to be a subspecies of *X. speciosa*. Bowman's (1951) records of *X. speciosa* include *X. mixta* (Walker), which was not recognized as a distinct species at the time.

2325 ***Xestia mixta*** – This species was historically included within the concept of *X. speciosa* (Hübner). *Xestia mixta* has more contrasting black and white coloring than *X. speciosa* and replaces it in the lower foothills and boreal forest region. See note 2324 on *X. speciosa*.

2327 ***Xestia atrata*** – AB populations are referable to the nominate subspecies.

2328 ***Xestia okakensis*** – Known in AB only from recent collections in alpine–subalpine habitats from the Cardinal Divide area and northward. AB specimens are referable to the nominate subspecies. Until recently this species was placed in *Pachnobia*, now considered to be a synonym of *Xestia* (Poole 1989).

2329 ***Xestia perquiritata*** – The nominate subspecies occurs in the boreal region and is replaced by subspecies *partita* McDunnough in the mountains of southwestern AB (Lafontaine 1998).

2330 ***Xestia fabulosa*** – This species was listed by Bowman (1951) as *Anomogyna* (= *Xestia*) *sincera* Herrich-Schäffer, a similar species now known to be restricted to the Palaearctic (Ferguson 1965).

2331 ***Xestia homogena*** – The nominate subspecies occurs in the Banff–Jasper region, replaced by subspecies *conditoides* (Benjamin) in the foothills and boreal forest region (Lafontaine 1998).

2331.1 ***Xestia bryanti*** – This species occurs in northeastern BC and may occur in northwestern AB. Until recently it was placed in *Archanarta*, now a synonym of *Xestia* (Poole 1989).

2332 ***Xestia lupa*** – This is a recently recognized name for North American populations traditionally treated within a Holarctic concept of *Xestia laetabilis* (Zetterstedt); *X. laetabilis* is strictly Palaearctic (Lafontaine 1998).

2333 ***Coenophila opacifrons*** – At the time of Bowman (1951), *C. opacifrons* was recognized as a valid species, but Franclemont and Todd (1983) treated it as a subspecies of the Palaearctic species *C. subrosea* (Stephens). Nearctic populations were recently recognized once again as distinct (Kononenko et al. 1989; Lafontaine 1998). This species is usually associated with peat bogs, but it has also been collected in the parklands near Stettler and in urban Edmonton, AB.

2335 ***Agnorisma bugrai*** – Listed by Bowman (1951) as *Graphiphora* (= *Agnorisma*) *collaris* (Grote and Robinson), a recently designated synonym (Lafontaine 1998).

2336 ***Pseudohermonassa bicarnea*** – This species was not listed by Bowman (1951), but it has been collected at several sites in east-central AB since 2000.

2338 ***Setagrotis pallidicollis*** – This species has been traditionally known as *S. cinereicollis* (Grote, 1876), a junior primary homonym of *Agrotis cinereicollis* Guenée, 1852 (Lafontaine 1998). Poole (1989) proposed *S. vocalis* (Grote) as a replacement name, but that taxon has since been recognized as a distinct species by Lafontaine (1998) (see note 2339 on *S. vocalis*). Bowman's (1951) records of *S. cinereicollis vocalis* (Grote) in AB are referable to *S. pallidicollis*.

2339 ***Setagrotis vocalis*** – This species was listed by Bowman (1951) in error, on the basis of a previous taxonomic arrangement (the name *vocalis* was mistakenly applied to the taxon now known as *S. pallidicollis* (Grote); see note 2338 on that species). *Setagrotis vocalis* has recently been recognized as distinct from *S. pallidicollis* and has recently been discovered in AB, in Waterton Lakes National Park, by GGA, BCS, and J. J. Dombroskie.

2340 ***Setagrotis radiola*** – Listed by Franclemont and Todd (1983) as *S. radiatus* (Smith), an invalid name (see Lafontaine 1998, page 185). Known in Canada only in the AB section of the lower South Saskatchewan River valley and the adjacent lower Red Deer River valley.

2341 ***Tesagrotis atrifrons*** – Known in AB from recent (2004, 2005) collections in the Waterton Lakes – Whistler Mountain area and from the Peace River area.

2341.1 ***Tesagrotis piscipellis*** – This species occurs in the extreme southeast of BC and may be found in the Crowsnest–Waterton area of AB.

2341.2 ***Adelphagrotis indeterminata*** – This species is found in southeastern BC and northwestern MT; it may occur in the Crowsnest–Waterton area of AB.

2343 ***Parabagrotis sulinaris*** – Known in AB from a single recent (2005) collection at Waterton Lakes National Park.

2346 ***Abagrotis erratica*** – Known in AB from a recent collection of three specimens at Writing-On-Stone Provincial Park.

2347.1 ***Abagrotis apposita*** – This species occurs in southeastern BC and western MT and may occur in the Crowsnest–Waterton area of AB.

2349 ***Abagrotis mirabilis*** – This is a western species, known in AB from a single 2005 collection from Waterton Lakes National Park.

2350 ***Abagrotis nefascia*** – This is a western species, known in AB from one collection near Manyberries.

2352 ***Abagrotis duanca*** – Known in AB from two collections in the Milk River valley.

2354 ***Abagrotis discoidalis*** – Known in AB only from the Milk River basin.

2355 ***Abagrotis hermina*** – This species was recently described (Lafontaine 1998); earlier records of *A. placida* (Grote) may refer to either *A. placida* or *A. hermina*.

2356 ***Abagrotis dodi*** – Type locality: Calgary, AB (head of Pine Creek).

2357 ***Abagrotis placida*** – Records before Lafontaine (1998) do not differentiate between *A. placida* and *A. hermina* Lafontaine and may refer to either species. Recent genetic barcoding data (GGA, unpublished. data) suggest that *A. placida* is a species complex, with more than one species present in AB. Much more work is needed on this group.

2358 ***Abagrotis orbis*** – Includes *barnesi* (Benjamin), a recently designated synonym (Lafontaine 1998). *Abagrotis orbis* was reported by Bowman (1951) as *A. barnesi nevadensis* (Benjamin); the taxon *nevadensis* was described as a form and has been revised as a synonym of *A. orbis* (Lafontaine 1998).

2360 ***Abagrotis scopeops*** – A single specimen collected in 2005 in Dinosaur Provincial Park is the only AB record.

2361 ***Abagrotis alternata*** – Bowman (1951) reported an Edmonton record, which we consider erroneous because we have been unable to locate any Edmonton specimens. This species is otherwise known in AB only from grasslands habitats.

2362 ***Abagrotis forbesi*** – Known in AB only from Waterton Lakes National Park, where it was discovered in 2008 by GGA. This species was treated as a synonym of *A. nefascia* (Smith) by Franclemont and Todd (1983), but it was recognized as a distinct species by Lafontaine (1998).

2363 ***Abagrotis brunneipennis*** – This species was not reported by Bowman (1951). It is associated with sand and is widespread in sandy Jack Pine forest in the boreal region of AB.

2364 ***Abagrotis cupida*** – This is a difficult species to identify; it was not reported by Bowman (1951) but we have seen specimens from a number of sites in the southern half of AB. The group including *A. cupida* and *A. brunneipennis* (Grote) is in need of study.

2365 ***Pronoctua typica*** – Known in AB only from recent (2005–2008) collections at Waterton Lakes National Park.

2366 ***Pronoctua peabodyae*** – This name is applied to AB material merely as a placeholder. Mitochondrial DNA barcode data received during the final stages of preparation of this manuscript suggest that AB specimens probably represent an undescribed species (GGA, unpublished data). Further research is required into this matter.

2367 ***Pronoctua craboi*** – The presence of this species in AB was suspected for some time and was confirmed in 2009 by GGA. It is known in AB from museum specimens from Nordegg, Kananaskis, and Waterton Lakes National Park. Although not listed as such by Bowman (1951), there are three specimens of *P. craboi* from Nordegg in his collection in the UASM, labeled "*Septis nichollae*." These appear in his checklist as *Protagrotis nichollae* Hampson, now a subspecies of *Apamea zeta* (Treitschke), see note 1934 on that species.

# Excluded Taxa

The following species have been erroneously reported as occurring in AB. Some of the entries in this list reflect cases that are deemed to be errors or misidentifications, but many result from recent taxonomic interpretations shifting the divisions between species and subspecies. Many others are due to the recognition of separate Palearctic and Nearctic species that were once considered conspecific. Taxa reported in error at the subspecies level in AB are not listed here, but they can be found in the index to this volume, which will refer the reader to the appropriate current placement. Details of current species and subspecies assignments are provided for each entry. Families and subfamilies are listed here in the order in which they appear in the main checklist, and the species within them are listed alphabetically.

**Tineidae**

E1 ***Elatobia martinella* Walker, 1863** – This is an Old World name that has been applied to *E. carbonella* (Dietz) in North America.

E2 ***Tinea grumella* Zeller, 1873** – Reported from AB by Bowman (1951). The sole voucher specimen in the Bowman collection at UASM is likely referable to *T. pellionella* (Linnaeus). *Tinea grumella* is considered a *nomen dubium* (J.-F. Landry, personal communication).

**Gracillariidae**

E3 ***Caloptilia pulchella* (Chambers, 1875)** – Reported by Bowman (1951) as *Gracillaria alnivorella pulchella*. *Caloptilia alnivorella* (Chambers) certainly occurs in AB, but *C. pulchella* is now considered a separate species, not known from AB.

**Yponomeutidae**

E4 ***Yponomeuta malinellus* Zeller, 1838** – Although unpublished, a record of *Y. malinellus* exists for AB. It is based on a single specimen in OLDS, which was obtained from a student's collection. The specimen is assumed to have been mislabeled. It is a species of *Yponomeuta* in the *padella* group, which in North America includes the introduced species *Y. malinellus*, *Y. padella* (Linnaeus), *Y. cagnagella* (Hübner), and the native *Y. multipunctella* Clemens (Menken et al. 1992). None of these species are known in western Canada outside of the fruit-growing areas of southern BC. The specimen was collected by M. Rosk and is labeled "Olds, Sept. 5, 1986." Given the known biology of the group (Menken et al. 1992), any member of the *padella* group to be found in western Canada would almost certainly be collected in late spring or early summer, not September. This leads us to conclude that the specimen was collected elsewhere and then mislabelled prior to submission with the insect collection assignment that is a part of the Olds College curriculum.

E5 ***Zelleria celastrusella* Kearfott, 1903** – Erroneous report by Bowman (1951), as *Xyrosaris celastrusella*. His record was based on two specimens in the UASM collected and identified by him; these are in fact *Epermenia infracta* Braun (Epermeniidae).

**Ypsolophidae**

E6 ***Ypsolopha frustella* (Walsingham, 1881)** – Listed by Bowman (1951) as *Harpipteryx dentiferella frustrella* [sic]. *Ypsolopha frustella* is currently considered a distinct species, but we know of no way to separate it from *Y. dentiferella* (Walsingham). Forbes (1923) treated *Y. frustella* as a synonym of *Y. dentiferella*, and apparently nothing has been published since to support its status as a distinct species. McDunnough (1939b) listed *frustella* as a form of *Y. dentiferella*. All known AB records are considered by us to represent the same biological entity and are listed under *Y. dentiferella*, pending clarification of the taxonomic status of these species.

**Xyloryctidae**

E7 ***Rhamphura ochristriata* (Walsingham, 1888)** – Reported by Bowman (1951), presumably on the basis of a misidentification. He reported it from the Waterton area, but no voucher specimens are known. *Rhamphura ochristriata* is restricted to northern CA. Two undescribed species of *Rhamphura* are known from the mountains of AB (J.-F. Landry, personal communication), and Bowman's report was probably based on specimens of one of these.

**Autostichidae**

E8 ***Oegoconia quadripuncta* (Haworth, 1828)** – Reported by Bowman (1951) on the basis of a previous taxonomic arrangement. *Oegoconia novimundi* (Busck) has recently been raised from synonymy for North American populations; true *O. quadripuncta* is restricted to the Old World (J.-F. Landry, personal communication).

**Cosmopterigidae**

E9 ***Walshia amorphella* Clemens, 1864** – Reported by Bowman (1951) on the basis of a previous taxonomic arrangement. All AB records are referable to *W. miscecolorella* (Chambers), which was considered a synonym of *W. amorphella* at the time of Bowman's report. McDunnough (1939b) listed it as a synonym, misspelled as "*miscecalonella* Chambers". *Walshia amorphella* is not known from western North America.

**Gelechiidae – Dichomeridinae**

E10 ***Dichomeris nonstrigella* (Chambers, 1878)** – The report by Bowman (1951) as *Thelyasceta nonstrigella* is assumed to be erroneous. No AB voucher specimens of this eastern North American species are known. Bowman's record is probably referable to *D. purpureofusca* (Walsingham), which is known from AB and which was considered by McDunnough (1939b) to be a synonym of *D. nonstrigella*. *Dichomeris purpureofusca* was reinstated as a full species by Hodges (1983).

**Sesiidae**

E11 ***Vitacea polistiformis*** (Harris, 1854) – This species was reported from the Calgary and Waterton areas by Bowman (1951), but that is assumed to be erroneous as no vouchers are known, and the closest to AB that it is known to occur is MI. This species is known as the Grape Root Borer; it is a common pest of grape (*Vitis* spp.; Vitaceae) in southeastern Canada and the eastern United States.

**Choreutidae**

E12 ***Anthophila fabriciana* (Linnaeus, 1767)** – Reported by Bowman (1951) in error. His specimens are *A. alpinella* (Busck), which Bowman also reported from AB, as a subspecies of *A. fabriciana*. True *A. fabriciana* is restricted to the Old World.

E13 ***Choreutis myllerana* (Fabricius, 1794)** – Reported from AB by Bowman (1951), but his specimens are referable to an undescribed species. *Choreutis myllerana* is restricted to the Palearctic. The new North American species has been referred to by J. Heppner, on determination labels in the CNC, as "*Prochoreutis epichoris*," an unpublished manuscript name.

**Tortricidae – Tortricinae**

E14 ***Acleris emargana* (Fabricius, 1775)** – Erroneous records by Bowman (1951) and Prentice (1965), based on a previous taxonomic arrangement. North American populations have been referred to for many years as *A. emargana* (Fabricius). However, according to Karsholt et al. (2005), *A. emargana* is strictly Palearctic; all North American specimens are *A. effractana* (Hübner). Both species occur in Eurasia.

E15 ***Acleris lipsiana* ([Denis and Schiffermüller], 1775)** – Erroneous record by Bowman (1951), based on a previous taxonomic arrangement. As far as is known, all reports of *A. lipsiana* in North America refer to *A. inana* (Robinson); true *A. lipsiana* is strictly Palearctic (Clarke 1987).

E16 ***Acleris obligatoria* Park and Razowski, 1991** – Pohl et al. (2004b) followed an incorrect taxonomic arrangement and used this name in place of *A. fuscana* (Barnes and Busck). They considered these taxa to be synonymous, with *obligatoria* as the valid name. That is incorrect: *A. fuscana* is a valid species, and *A. obligatoria* is restricted to Asia (Brown 2005).

E17 ***Aethes angulatana* (Robinson, 1869)** – Erroneous records by Bowman (1951) and Razowski (1997). What these authors and others have reported as *A. angulatana* in western North America is in fact the recently described species *A. sexdentata* Sabourin and Miller (Sabourin et al. 2002). True *A. angulatana* is not known to occur west of MN.

**Tortricidae – Olethreutinae**

E18 ***Apotomis frigidana* (Packard, 1867)** – This northern Holarctic species was reported in error from AB by Bowman (1951). His voucher specimens are in fact *A. capreana* (Hübner), dissected and confirmed by GRP. True *A. frigidana* is probably restricted to alpine and arctic tundra. It may yet be found in the Rocky Mountains of AB, but this prospect is not considered likely enough for the species to be included in the current checklist as a probable AB species.

E19 ***Endothenia quadrimaculana* (Haworth, 1811)** – Erroneous record based on a previous taxonomic arrangement. All North American populations previously treated as *E. quadrimaculana* are now treated as *E. nubilana* (Clemens). True *E. quadrimaculana* is restricted to the Old World. Bowman (1951) and Heinrich (1926) referred to AB populations as *E. antiquana nubilana* (*antiquana* Hübner being a synonym of *E. quadrimaculana*).

E20 ***Epinotia nigralbanoidana* McDunnough, 1929** – Report by Bowman (1951), assumed to be erroneous. No AB voucher specimens can be found, and this species is otherwise known in Canada only from Point Pelee, ON.

E21 ***Epinotia vagana*** **Heinrich, 1923** – Report from AB by Prentice (1965), considered erroneous. No AB voucher specimens can be found in the CNC or NFRC. The nearest record to AB of which we are aware is the type locality (Liaga, WA).

E22 ***Eucosma occipitana*** **(Zeller, 1875)** – Records of this species in Canada (placed in the genus *Pelochrista*), including AB records by Bowman (1951), are referable to *P. kingi* Wright, which had not been described at the time of Bowman's publication; see note 699 on that species for details. *Eucosma occipitana* is not known to occur north of CO.

E23 ***Evora hemidesma*** **(Zeller, 1875)** – Reported in error by Bowman (1951), on the basis of misidentified *Hedya ochroleucana* (Frölich) specimens in the UASM. *Evora hemidesma* is known from SK and may yet be found in adjacent AB.

E24 ***Olethreutes versicolorana*** **(Clemens, 1860)** – Reported in error by Bowman (1951), as *Exartema versicoloranum*. His record was based on misidentified *O. appendiceum* (Zeller) specimens in the UASM.

E25 ***Pelochrista fuscosparsa*** **(Walsingham, 1895)** – This species was reported from AB by Bowman (1951), but his voucher specimen is referable to *Eucosma bilineana* Kearfott (D. Wright, personal communication). *Pelochrista fuscosparsa* is not known to occur in Canada.

E26 ***Zeiraphera diniana*** **(Guenée, 1845)** – Reported in error by Bowman (1951) and Prentice (1965), on the basis of a previous taxonomic arrangement. Their records are referable to *Z. improbana* (Walker), which was not recognized in North America at the time of their publications; true *Z. diniana* is restricted to the Old World.

**Epermeniidae**

E27 ***Epermenia imperialella*** **Busck, 1906** – This species was reported from AB by Pohl et al. (2005). However, the material is referable to *E. falcata* Gaedike, which had not been described at that time. True *E. imperialella* is not known to occur west of MB.

**Alucitidae**

E28 ***Alucita hexadactyla*** **Linnaeus, 1758** – This name was traditionally applied to North American populations of *Alucita* species, which are referable to *A. montana* Barnes and Lindsey, *A. adriendenisi* Landry and Landry, and *A. lalannei* Landry and Landry. True *A. hexadactyla* is restricted to the Old World.

E29 ***Alucita huebneri*** **Wallengren, 1859** – Erroneous record by Bowman (1951). Like *A. hexadactyla* Linnaeus, the name *A. huebneri* was sometimes applied to all *Alucita* specimens in North America. Bowman's specimens identified as *A. huebneri* comprise a mixed series of *A. montana* Barnes and Lindsey, *A. adriendenisi* Landry and Landry, and *A. lalannei* Landry and Landry, all recognized recently in North America (Landry and Landry 2004). True *A. huebneri* is restricted to the Old World.

**Pterophoridae**

E30 ***Platyptilia williamsii*** **Grinnell, 1908** – Bowman's (1951) record is assumed to be a misidentification; no voucher specimens are known for this species, which is otherwise unknown in western Canada.

E31 ***Stenoptilia exclamationis*** **(Walsingham, 1880)** – Reported from "British Columbia east to Ontario; also Colorado" by Barnes and Lindsey (1921), but this information is incorrect, as no specimens are known from AB (D. A. Macaulay, personal communication).

**Pyralidae – Epipaschiinae**

E32 ***Toripalpus breviornatalis* (Grote, 1877)** – Bowman's (1951) record is an error. It appears to have been based on a misidentified specimen of *Chrysoteuchia topiarius* (Zeller) (Crambidae) found under this name in the UASM synoptic collection by GRP.

**Pyralidae – Phycitinae**

E33 ***Dioryctria ponderosae* Dyar, 1914** – Misidentification by Bowman (1951). This species is restricted to Ponderosa Pine, which does not occur naturally in AB.

E34 ***Melitara nephelepasa* (Dyar, 1919)** – Erroneous record by Bowman (1951), based on a previous taxonomic arrangement. His records are referable to *M. subumbrella* (Dyar), which was considered at the time to be a synonym of *M. nephelepasa* (McDunnough 1939b). Munroe (1983) listed *M. nephelepasa* as a synonym of *M. subumbrella*; however, *M. nephelepasa* is currently recognized as a valid species, restricted to central Mexico (T. Simonsen, personal communication).

E35 ***Phycitodes reliquellum* (Dyar, 1904)** – Misidentification by Bowman (1951). His record is referable to *P. mucidella* (Ragonot). *Phycitodes reliquellum* is restricted to eastern North America.

E36 ***Pyla rainierella* Dyar, 1904** – Bowman's (1951) record is a misidentification. No AB voucher specimens are known for this species, which is otherwise known only in western WA.

E37 ***Pyla scintillans* (Grote, 1881)** – Bowman's (1951) record is a misidentification, referable to *P. aeneoviridella* Ragonot.

E38 ***Sciota termitalis* (Hulst, 1886)** – Erroneous record based on a previous taxonomic arrangement. The species *S. levigatella* (Hulst), reported in AB by Bowman (1951), was for many years treated as a synonym of *S. termitalis*, which resulted in the erroneous report of the latter species in AB.

**Crambidae – Crambinae**

E39 ***Euchromius ocelleus* (Haworth, 1811)** – Bowman's (1951) record of this species in AB was based on a previous taxonomic arrangement. He listed *Ommatopteryx* [= *Euchromius*] *texanus* Robinson. At that time, both *E. ocelleus* and *E. californicalis* (Packard) were considered synonyms of *E. texana* (McDunnough 1939b), but both are now recognized as valid species, and *texana* is now considered a synonym of *E. ocelleus*. However, Bowman's specimens, and all other known AB material, are referable to *E. californicalis*. *Euchromius ocelleus* is not known from Canada; however, it is known from WA and CO and may yet be found in western Canada.

**Crambidae – Schoenobiinae**

E40 ***Donacaula forficella* (Thunberg, 1794)** –European species reported in error by Bowman (1951). The AB material is referable to *D. longirostrallus* (Clemens), or possibly to *D. amblyptepennis* (Dyar) (see note 986 on *D. longirostrallus* for details).

**Crambidae – Pyraustinae**

E41 ***Diacme elealis* (Walker, 1859)** – Reported by Bowman (1951) in error, on the basis of material that has been historically misidentified in several Canadian collections. All known AB material has been redetermined as *D. adipaloides* (Grote); *D. elealis* is not known to occur in Canada.

E42 ***Diastictis argyralis* Hübner, 1818** – Bowman (1951) listed *D. argyralis* and *D. argyralis ventralis* from AB. All of his specimens are in fact *D. ventralis* (Grote and Robinson), which was then thought to be a subspecies of *D. argyralis* (McDunnough 1939b). True *D. argyralis* does not occur in northwestern North America.

E43 ***Nomophila noctuella* ([Denis and Schiffermüller], 1775)** – An Old World name traditionally applied to North American populations of *N. nearctica* Munroe, including AB populations (by Bowman 1951).

**Hesperiidae**

E44 ***Hesperia comma* (Linnaeus, 1758)** – Considered here to be of Beringian distribution, including only the far northwest of North America, in AK and YT (Forister et al. 2004). AB records by Bird et al. (1995) and others are referable to *H. manitoba* (Scudder) and *H. assiniboia* (Lyman).

E45 ***Hesperia pahaska* (Leussler, 1938)** – This species has been reported from AB by MacNeill (1964), on the basis of a museum specimen from Banff. We have not been able to confirm the identification of that specimen and assume that it is incorrect, as no suitable habitat exists in that area. This species is known from adjacent MT and southern SK and is included as a probable AB species in the current checklist.

E46 ***Pyrgus albescens* Plötz, 1884** – Bowman (1951) reported *Pyrgus communis albescens* in AB. These specimens are referable to *P. communis* (Grote). *Pyrgus albescens*, now thought to constitute a full species, is restricted to the southern United States.

**Papilionidae**

E47 ***Papilio aliaska* Scudder, 1869** – Treatment of the taxon *pikei* Sperling as a subspecies of *P. aliaska*, as recommended by Eitschberger (1993), has not been applied in the current checklist. *Papilio aliaska* does not occur in AB.

E48 ***Papilio bairdii* Edwards, 1866** – AB populations of the taxa *dodi* McDunnough and *pikei* Sperling were treated as subspecies of *P. bairdii* by Guppy and Shepard (2001) but are treated in the current checklist as subspecies of *P. machaon* Linnaeus. *Papilio bairdii* does not occur in AB.

E49 ***Papilio oregonius* Edwards, 1876** – The taxon *dodi* McDunnough was treated as a subspecies of *P. oregonius* by Miller and Brown (1981) but is treated in the current checklist as a subspecies of *P. machaon* Linnaeus. *Papilio oregonius* does not occur in AB.

**Pieridae**

E50 ***Anthocharis sara* Lucas, 1852** – AB records are referable to *A. stella* Edwards, previously treated by some as a subspecies of *A. sara*. *Anthocharis sara* does not occur in AB.

E51 ***Colias hecla* Lefebvre, 1836** – Reported in AB as *C. hecla glacialis* McLachlan and *C. hecla pallida* Skinner, by Bowman (1951). These names refer to southern populations that have recently been recognized as a distinct species, *C. canadensis* Ferris. True *C. hecla* is restricted to the high Arctic.

E52 ***Colias meadii* Edwards, 1871** – AB records are referable to *C. elis* Strecker, previously treated by many workers as a subspecies of *C. meadii*; see Appendix, entry A3, for details. *Colias meadii* does not occur in AB.

E53 ***Pieris napi* (Linnaeus, 1758)** – North American records of *P. napi* are referable to *P. oleracea* Harris and *P. marginalis* (Scudder). True *P. napi* is restricted to the Old World.

**Lycaenidae**

E54 ***Aricia acmon* (Westwood, 1852)** – AB populations are referable to *A. lupini* (Boisduval), previously treated as a subspecies of *A. acmon*. True *A. acmon* is restricted to the west coast of North America.

E55 ***Callophrys dumetorum* (Boisduval, 1852)** – Bowman's (1951) record is based on material now considered to be *S. sheridanii* (Edwards). True *C. dumetorum* is now considered to apply to a taxon restricted to habitats in CA (Warren 2005), although the taxonomy of these green elfins remains a matter of active debate.

E56 ***Celastrina ladon* (Cramer, [1780])** – AB populations treated herein as *C. lucia* (Kirby) and *C. echo nigrescens* (Fletcher) have been listed by recent workers (Bird et al. 1995; Layberry et al. 1998) as a subspecies of *C. ladon*. True *C. ladon* occurs only in eastern North America.

E57 ***Cupido comyntas* (Godart, [1824])**– Reported by Opler (1999) from AB, as *Everes comyntas*, but this reflects a mapping error (P. A. Opler, personal communication).

E58 ***Euphilotes enoptes* (Boisduval, 1852)** – Canadian records are referable to *E. ancilla* (Barnes and McDunnough), previously treated by many workers, including Bird et al. (1995), as a subspecies of *E. enoptes*. True *E. enoptes* does not occur in Canada.

E59 ***Satyrium californicum* (Edwards, 1862)** – Erroneous record by Bowman (1951), based on misidentified *S. sylvinus* (Boisduval) material.

E60 ***Satyrium fuliginosa* (Edwards, 1861)** – Recorded by Bowman (1951) and others on the basis of a previous taxonomic concept. AB populations once considered to be *S. fuliginosa* are now treated as a distinct species, *S. semiluna* Klots. True *S. fuliginosa* does not occur in Canada.

**Nymphalidae**

E61 ***Boloria napaea* (Hoffmansegg, 1804)** – Reported for AB (and the rest of North America) by Bird et al. (1995), Layberry et al. (1998), and others on the basis of a previous taxonomic concept. North American populations are referable to *B. alaskensis* (Holland); *B. napaea* is restricted to the Palearctic.

E62 ***Boloria selene* ([Denis and Schiffermüller], 1775)** – Reported for AB (and the rest of North America) by Bird et al. (1995), Layberry et al. (1998), and others on the basis of a previous taxonomic concept. North American populations are herein treated as a distinct species, *B. myrina* (Cramer); see Appendix, entry A7. *Boloria selene* is restricted to the Palearctic.

E63 ***Boloria titania* (Esper, [1793])** – Reported from boreal North America by many workers, on the basis of a previous taxonomic arrangement. Those populations are treated herein as *B. chariclea grandis* (Barnes and McDunnough), as they are by most modern workers. We consider true *B. titania* to be restricted to the Palearctic.

E64 ***Boloria tritonia* (Boeber, 1812)** – Reported from the mountains of western AB as *Clossiana tritonia astarte* (Doubleday) by Guppy and Shepard (2001), on the basis of a different taxonomic hypothesis. We follow Layberry et al. (1998) and Pelham (2008) in considering the taxon *astarte* (along with subspecies *distincta* (Gibson) of AK, YT, NT and far northern BC) as a distinct species. Under this interpretation, *B. tritonia* is restricted to the Palearctic.

E65 ***Chlosyne whitneyi* (Behr, 1863)** – Reported in error by Bowman (1951), as a subspecies of *C. palla* (Boisduval). The name *whitneyi* properly applies to populations in the Sierra Nevada of CA and is not considered conspecific with *C. palla*.

E66 ***Erebia disa* (Thunberg, 1791)** – Bird et al. (1995) used the prevailing interpretation of the taxon *mancinus* Doubleday as a subspecies of *E. disa*. North American populations of *E. disa* are presently defined as occurring only in Arctic areas; no populations occur in AB (Layberry et al. 1998).

E67 ***Erebia theano* (Tauscher, 1809)** – Reported from AB by Ehrlich (1958), on the basis of a previous taxonomic arrangement. We consider *E. theano* to be restricted to the Palearctic and treat the North American taxon as *E. pawloskii* Ménetriés. Ehrlich's record is assumed to be an error, likely based on a mislabeled specimen; see note 1220 on *E. pawloskii*.

E68 ***Euphydryas chalcedona* (Doubleday, 1847)** – Erroneous record by Layberry et al. (1998), who treated *E. anicia* (Doubleday) as a subspecies of *E. chalcedona*. *Euphydryas anicia* is considered here to be a distinct species. True *E. chacedona* occurs only west of the Rocky Mountains (Guppy and Shepard 2001).

E69 ***Nymphalis l-album* (Esper, 1781)** – Reported from AB (and the rest of North America) by Bird et al. (1995) and others, on the basis of a previous taxonomic concept. This species has been referred to for the past 100 years as "*N. vaualbum*" ([Denis and Schiffermüller]), a *nomen nudum*. *Nymphalis l-album* is considered here to be strictly Palearctic (see Appendix, entry A4). The North American taxon is *N. j-album* (Boisduval and LeConte).

E70 ***Oeneis jutta* (Hübner, [1806])** – Reported from AB (and the rest of North America) by Bird et al. (1995) and others, on the basis of a previous taxonomic concept. Gross (1970), Kurentsov (1970), Murayama (1973), and Lukhtanov (1987) have concluded that *O. jutta* does not occur in North America.; *O. balderi* (Geyer) is the North American taxon.

E71 ***Oeneis reducta* McDunnough, 1929** – Reported as being present in AB, as a subspecies of *O. jutta* (Hübner), by Guppy and Shepard (2001), but this represents an identification error. These specimens are referable to *O. balderi chermocki* Wyatt. True *O. reducta* is found only in the United States.

E72 ***Polygonia hylas* (Edwards, 1872)** – Reported from southwestern AB by Anderson (1959), but these populations are herein treated under the concept of *P. faunus cenveray* Scott and Kondla. However, this matter requires additional study, as does the popular interpretation of *P. hylas* as a subspecies of *P. faunus* (dos Passos 1977), for which no supporting evidence has been published.

E73 ***Speyeria nevadensis* (Edwards, 1870)** – Reported from AB by Howe (1975), as *S. nevadensis calgariana* (McDunnough), on the basis of a previous taxonomic hypothesis. The taxon *calgariana* is now considered to be a subspecies of *S. callippe* (Boisduval); *S. nevadensis* is restricted to southern CA and central OR.

**Geometridae – Larentiinae**

E74 ***Entephria aurata* (Packard, 1867)** – Bowman's (1951) erroneous record is referable to *E. multivagata* (Hulst).

E75 ***Eulithis diversilineata* (Hübner, [1813])** – Bowman's (1951) report was based on specimens from Calgary and near Lloydminster (Sunnydale) that have since been corrected to *E. gracilineata* (Guenée). At the time, the taxon *gracilineata* was considered to be a form of *E. diversilineata* (McDunnough 1938c).

E76 ***Euphyia unangulata* (Haworth, 1809)** – Reported from AB by Bowman (1951) on the basis of a previous taxonomic arrangement, as *E. unangulata intermediata*

(Guenée). *Euphyia intermediata* is now recognized as a full species (Parsons et al. 1999); *E. unangulata* is restricted to the Palearctic.

E77 ***Eupithecia fletcherata* Taylor, 1907** – The AB record by Prentice (1963), which was repeated by Ives and Wong (1988), is erroneous. Specimens from AB and SK that were reported as *E. fletcherata* by Canadian Forest Service personnel conducting the Forest Insect and Disease Survey have been corrected, by Bolte (1990), to *E. sharronata* Bolte.

E78 ***Eupithecia monacheata* Cassino and Swett, 1922** – Reported in error by Bowman (1951); the specimens identified as *E. monacheata* in his collection are referable to *E. ornata* (Hulst).

E79 ***Eupithecia placidata* Taylor, 1908** – Reported from AB by CBIF (2003), but no AB specimens are known. However, the species is known from adjacent parts of BC, and it is included in the current checklist as a probable AB species.

E80 ***Eupithecia undata* Freyer, 1842** – Erroneous record by Bowman (1951), based on a previous taxonomic arrangement. North American populations traditionally treated as *E. undata* have recently been described by Bolte (1990) as a distinct species, *E. lafontaineata* Bolte. *Eupithecia undata* is restricted to the Palearctic.

E81 ***Hydriomena pluviata* (Guenée, [1858])** – Presumed to be a misidentification by Bowman (1951). No AB voucher specimens are known for this species, which is otherwise known in Canada only from QC.

E82 ***Hydriomena californiata* (Packard, 1871)** – Reported from AB by Prentice (1963), on the basis of a collection of three specimens from Seebe (Forest Insect and Disease Survey, no. 53-8-2119A). One of these specimens, held in the NFRC, has been re-examined and corrected to *H. albimontanata* McDunnough. The others, which may be in the CNC, are also assumed to have been misidentified, as this species is otherwise not known from east of western BC.

E83 ***Lobophora montanata* Packard, 1874** – Bowman's (1951) records are referable to *L. nivigerata* Walker and *L. magnoliatoidata* (Dyar), the former being found in the boreal forest and aspen parkland and the latter in the mountains. *Lobophora montanata* is known in Canada only from BC. A taxonomic review of the group is needed.

E84 ***Psychophora suttoni* Heinrich, 1942** – AB populations previously identified as *P. suttoni* by Bowman (1951) are in fact a new species near *P. suttoni*. The genus is being revised by BCS. *Psychophora suttoni* is an eastern species, not known to occur west of QC.

E85 ***Xanthorhoe incursata* (Hübner, [1813])** – This species was reported in AB by Bowman (1951) on the basis of a previous taxonomic arrangement. He reported *X. incursata lagganata* Swett and Cassino, but we consider *X. lagganata* to be a valid species (see Appendix, entry A11). True *X. incursata* is restricted to central Europe.

E86 ***Zenophleps lignicolorata* (Packard, 1874)** – Specimens of *Zenophleps* from AB have previously been treated as two species: a brownish, poorly marked taxon found in the southern prairies, as *Z. lignicolorata* (type locality: CA), and a grayer, more well-marked form from other regions, as *Z. alpinata* Cassino (type locality: Alpine, TX). Study of additional material has shown that phenotypes intermediate in color and pattern occur in the prairie–montane transition regions (Waterton Lakes National Park and the Cypress Hills). There are no structural differences between the pale and marked forms, and no molecular differentiation is evident (for the "bar code" fragment of *cox1* in the mitochondrial DNA). We therefore treat all AB specimens of *Zenophleps* as Z. *alpinata*, although it is uncertain that this application of the name

*alpinata* is correct; a taxonomic review of this group is needed. We have not examined *Z. lignicolorata* from other regions to determine its status as a valid species elsewhere.

**Geometridae – Sterrhinae**

E87 ***Lobocleta quaesitata* (Hulst, 1880)** – Reported in error from AB and BC by McGuffin (1967), as *Scopula quaesitata*. Covell (1970) transferred *quaesitata* from *Scopula* to *Lobocleta*. The specimens referred to by McGuffin (1967) are apparently all referable to *S. luteolata* (Hulst), as indicated by the specimens illustrated therein and by specimens in the CNC. *Lobocleta quaesitata*, although superficially similar to *S. luteolata*, is not known to occur in Canada and is restricted to the southwestern United States (Covell 1970). The confusion between these two species may have stemmed from the fact that the tibial spines and leg hair pencils in male *S. luteolata* are extremely variable (Covell 1970), which led McGuffin (1967) to conclude that two genera were involved. The unusual structural variation and variation in the *cox1* gene (BCS, unpublished data) suggests that more than one species may be present in nominate *S. luteolata*.

**Geometridae – Ennominae**

E88 ***Besma endropiaria* (Grote and Robinson, 1867)** – This species is not known to occur west of ON, and previous AB records (Bowman 1951; Lafontaine and Troubridge 2003) are all referable to *B. quercivoraria* (Guenée). *Besma endropiaria* was treated as a synonym of *B. quercivoraria* by McGuffin (1987), but some authors have treated these as separate species (e.g., Forbes 1948; Handfield 1999), a view supported by phenotypic, host-plant use, and molecular differences (*cox1* "bar code" fragments in mitochondrial DNA). In contrast to *B. quercivoraria, B. endropiaria* lacks a well-defined discal spot, has less angulate wing margins, and feeds on oaks and maples (rather than alder and birch), according to reared material from the Forest Insect and Disease Survey, held at the CNC (BCS, unpublished data). In eastern North America, there are also differences in the number of broods, with *B. quercivoraria* producing two annual broods and *B. endropiaria* just one brood (Wagner et al. 2001).

E89 ***Digrammia continuata* (Walker, 1862)** – Report in Bowman (1951) is referable to *D. setonana* (McDunnough); *D. continuata* is not known to occur west of MB.

E90 ***Digrammia muscariata* (Guenée, [1858])** – Report by Bowman (1951) as *Semiothisa teucaria* Strecker, a synonym, is assumed to be erroneous. No AB voucher specimens are known. *Digrammia muscariata* is restricted to the west coast of North America.

E91 ***Eufidonia notataria* (Walker, 1860)** – Bowman's (1951) record is referable to *E. convergaria* (Walker), which at the time was treated as a subspecies of *E. notataria.*

E92 ***Hypomecis umbrosaria* (Hübner, [1813])** – The Bowman (1951) listing is assumed to be erroneous; no AB voucher specimens can be found, and this species is otherwise unknown from Canada.

E93 ***Macaria bicolorata* (Fabricius, 1798)** – AB populations previously identified as *M. bicolorata* (e.g., Prentice 1963; McGuffin 1972) are in fact the recently described *M. masquerata* Ferguson. *Macaria bicolorata* is found in the eastern United States and is not known from Canada (Ferguson 2008).

E94 ***Macaria bisignata* Walker, 1866** – Prentice (1963) reported a single collection from the vicinity of Edson, which is assumed to be a misidentification. No voucher specimen is known, and there are no confirmed records of *M. bisignata* west of ON (McGuffin 1972).

E95 ***Macaria granitata* Guenée, [1858]** – Reported by Bowman (1951) on the basis of misidentified specimens of *M. signaria* (Hübner); see note 1429 on the latter species. *Macaria granitata* is otherwise known in Canada only from QC.

E96 ***Nepytia umbrosaria* (Packard, 1873)** – Reported for AB by Ives and Wong (1988), as *N. umbrosaria nigrovenaria* (Packard). We treat this as an error, as no voucher specimens can be located. This record may be based on misidentified larvae of *N. freemani* Munroe collected from Douglas-fir, a host shared by these two species. *Nepytia umbrosaria* is currently known primarily from Vancouver Island, the lower mainland of BC, and (on the basis of a single record) Kaslo, BC (Prentice 1963; McGuffin 1987). There is a remote chance that it will be found in the foothills of southwestern AB in association with Douglas-fir, but it has not been listed as a probable AB species in the current checklist.

E97 ***Orthofidonia exornata* (Walker, 1862)** – Reported erroneously from AB by McGuffin (1977) and Pohl et al. (2004b). After examination of a large number of *Orthofidonia* specimens from AB, we conclude that all AB material is referable to *O. tinctaria* (Walker).

E98 ***Pero ancetaria* (Hübner, 1806)** – Reported in error, as *P. marmoratus* (Grossbeck), a synonym, by Prentice (1963), on the basis of specimens from southwestern AB. According to McGuffin (1987), these specimens are referable to *P. honestaria* (Walker). *Pero ancetaria* was previously referred to as *P. hubneraria* (Guenée), an unnecessary replacement name (Parsons et al. 1999).

E99 ***Speranza anataria* (Swett, 1913)** – AB populations previously identified as *S. anataria* (e.g., Bowman 1951; Prentice 1963; McGuffin 1972) are in fact the recently described *S. boreata* Ferguson. *Speranza anataria* is an eastern species, confirmed as far west as southeastern MB (Ferguson 2008).

E100 ***Speranza denticulodes* (Hulst, 1896)** – Reported in error by Bowman (1951); his record is referable to *S. decorata* (Hulst). *Speranza denticulodes* is not known to occur in Canada.

E101 ***Speranza flavicaria* (Packard, 1876)** – Reported in error by Bowman (1951); his record is referable to *S. occiduaria* (Packard). *Speranza flavicaria* does not occur in Canada.

**Saturniidae**

E102 ***Hyalophora columbia* (Smith, 1865)** – Reported from AB by Tuskes et al. (1996), on the basis of a previous taxonomic arrangement. Their records refer to *H. gloveri* (Strecker), revised herein to full species status (see Appendix, entry A17).

**Sphingidae**

E103 ***Sphinx gordius* Cramer, 1780** – Reported in AB by Bowman (1951) and McGugan (1958), on the basis of a previous taxonomic arrangement. These records are referable to *S. poecila* Stephens. *Sphinx gordius* is not known to occur west of SK. However, given the likelihood of finding it in AB, it is included as a probable AB species in the current checklist.

E104 ***Sphinx pinastri* Linnaeus, 1758** – This Eurasian species was reported from AB by Dod (1914), who credited the record to Barnes and McDunnough (1910) and who stated that one specimen had been collected at Waghorn (now known as Blackfalds), AB, "perhaps by P. B. Gregson" (Dod 1914, page 398). Percy B. Gregson farmed near Blackfalds and was president of the Northwest Entomological Society in 1899 (Bird et

al. 1995). No voucher specimens are known, and the species has not been documented in AB since this report. *Sphinx pinastri* has been taken at a few other locations in North America; these specimens were presumably introduced by humans. No established populations are currently known in North America. We conclude that this record represents either a misidentification or an unestablished interception, and we have removed it from the list of AB species.

**Notodontidae**

E105 ***Clostera inclusa* (Hübner, [1831])** – Reported in AB by Prentice (1962), apparently on the basis of a single reared specimen in the NFRC which has malformed wings and appears to be a specimen of *C. apicalis* (Walker). *Clostera inclusa* is an eastern species that is not otherwise known west of MB.

E106 ***Furcula borealis* (Guérin-Méneville, 1832)** – Bowman's (1951) record (as *Cerura borealis*) is assumed to be a misidentification of another *Furcula* species. We have been unable to locate a voucher specimen, and *F. borealis* is otherwise not known from west of ON. See also the entry for this species in the Appendix (entry A19).

**Erebidae – Lymantriinae**

E107 ***Dasychira obliquata* (Grote and Robinson, 1866)** – Bowman's (1951) records (as *Olene atomaria parallela* Grote and Robinson, a synonym) are of uncertain identity, but likely refer to *D. dorsipennata* (Barnes and Benjamin); *D. obliquata* is not otherwise known from west of MB and is herein removed from the AB list.

**Erebidae – Arctiinae**

E108 ***Crambidia impura* Barnes and McDunnough, 1913** – Based on examination of a longer series of specimens and DNA analysis, it is now clear that AB specimens previously reported as *C. impura* (Schmidt 2000; CBIF 2003) are variants of *C. casta* (Packard). Boreal and mountain populations tend to show more gray coloration on the ventral wing surface and the front of the head, but variation and intermediate forms occur in the aspen parkland and Peace River regions. This situation also calls into question the taxonomic status of the YT populations reported as *C. impura* by Ferguson et al. (2000). *Crambidia impura* was originally described from CO.

E109 ***Gnophaela latipennis* (Boisduval, 1852)** – Reported from AB by Bowman (1951), as *G. latipennis vermiculata*, on the basis of a previous taxonomic arrangement. *Gnophaela vermiculata* (Grote), now recognized as a valid species, occurs in AB; *G. latipennis* does not. Ives and Wong (1988) mistakenly applied the name *G. latipennis* to AB populations of *G. vermiculata* as well.

E110 ***Grammia bolanderi* (Stretch, 1872)** – Bowman (1951) reported this species from AB, but no voucher specimens are known. This report is assumed to be based on a misidentification. *Grammia bolanderi* is otherwise known only from Mount Shasta, CA.

E111 ***Grammia celia* (Saunders, 1863)** – Reports of this species in western Canada, including in AB by Bowman (1951), are referable to the recently described *G. margo* (Schmidt). *Grammia celia* does not occur in western Canada.

E112 ***Spilosoma pteridis* Edwards, 1874** – Boreal populations traditionally treated as *S. pteridis* (Bowman 1951) have recently been recognized as a distinct species, *S. danbyi* (Neumoegen and Dyar) (Ferguson et al. 2000). *Spilosoma pteridis* is not known to

occur in AB but does occur in BC and MB; it may be found in southern AB and is therefore included as a probable AB species in the current checklist.

E113 ***Virbia fragilis* (Strecker, 1878)** – Reported from AB by CBIF (2003) and Zaspel et al. (2008) in error; these records are referable to *V. ferruginosa* (Walker). *Virbia fragilis* is restricted to the western United States, occurring only as far north as WY (BCS, unpublished data). See also note 1613 on *V. ferruginosa*.

E114 ***Virbia lamae* (Freeman, 1941)** – This species was reported from AB on the basis of a single female specimen collected near Redwater (Schmidt 2000). Additional specimens from the boreal region and DNA analysis have shown that these are not *V. lamae*, but are variants of an undescribed *Virbia* species, treated in the current checklist as *V.* sp. nr. *aurantiaca* (Hübner) (see note 1612 on that species).

**Erebidae – Herminiinae**

E115 ***Renia flavipunctalis* (Geyer, 1832)** – Reported by CBIF (2003) as occurring in AB, but no voucher specimens are known to exist. However, this species is known in central Canada west to southeastern SK and may occur in southeastern AB, so it is included as a probable AB species in the current checklist.

**Erebidae – Calpinae**

E116 ***Calyptra canadensis* (Bethune, 1865)** – Bowman (1951) included this species as part of the AB fauna on the basis of a literature reference to "Alta," attributed to McDunnough (1943b), but this appears to be an error, as there is no reference to this species in McDunnough (1943b) or in any of the other references cited by Bowman (1951). Dod (1915c, page 130) did list this species, based "solely on the authority of Dr. Holland, who states in the 'Moth Book' [Holland 1903] that the species ranges as far westward as Alberta." Crumb (1956) also reported *C. canadensis* from AB, presumably on the basis of the same earlier reports. Until this species can be confirmed for the province by means of voucher material, these records are considered erroneous. *Calyptra canadensis* occurs in eastern Canada and as far west as the eastern Qu'Appelle valley of SK (Hooper 1990a).

**Erebidae – Hypenodinae**

E117 ***Hypenodes caducus* (Dyar, 1907)** – Misidentification by Bowman (1951), based on a previous taxonomic arrangement. Bowman's series of *Hypenodes*, identified as *Menopsimus* (= *Hypenodes*) *caducus* in the UASM, is a mixed series of *H. fractilinea* (Smith) and *H. sombrus* Ferguson. At the time, *H. caducus* was the only recognized species in the genus, *H. fractilinea* was considered a synonym, and *H. sombrus* had not yet been described (McDunnough 1938c).

**Noctuidae – Plusiinae**

E118 ***Polychrysia moneta* (Fabricius, 1787)** – Erroneous records by Bowman (1951) and Crumb (1956), based on a previous taxonomic arrangement. North American populations were traditionally treated as a subspecies of *P. moneta* or of *trabea* (Smith), a synonym. Kostrowicki (1961) showed that *P. esmeralda* (Oberthür) and *P. moneta* are not the same species and that North American populations are an eastern extension of the East Asian *P. esmeralda*. *Polychrysia moneta* is strictly Palearctic.

E119 ***Syngrapha montana* (Packard, 1869)** – Erroneous record, based on Bowman's (1951) report of "*S. microgramma* [sic] *montana*". *Syngrapha microgamma* (Hübner) occurs in

AB, but *S. montana* is now recognized as a distinct species that has not yet been found in the province. However, *S. montana* is known from the Lloydminster area of SK and is included as a probable AB species in the current checklist.

E120 ***Syngrapha sackenii* (Grote, 1877)** – We reject both Bowman's (1951) record and the report by Eichlin and Cunningham (1978). These AB records are based on atypical specimens of *S. borea* (Aurivillius) (Lafontaine and Poole 1991). No confirmed AB specimens are known.

**Noctuidae – Acronictinae**

E121 ***Acronicta leporina* (Linnaeus, 1758)** – Erroneous records by Bowman (1951; as *A. leporina cretatoides* (Benjamin)), Crumb (1956), and Prentice (1962), based on a previous taxonomic arrangement. North American populations traditionally treated as *A. leporina* have recently been revised to *A. vulpina* Guenée (Mikkola et al. 1991). *Acronicta leporina* is strictly Palearctic.

**Noctuidae – Cuculliinae**

E122 ***Cucullia serraticornis* Lintner, 1874** – Misidentification by Bowman (1951), as *Rancora solidaginis* (Strecker), a synonym of *C. serraticornis*. His record is referable to *C. strigata* (Smith). *Cucullia serraticornis* is restricted to the southwestern United States.

**Noctuidae – Amphipyrinae**

E123 ***Feralia deceptiva* McDunnough, 1920** – The AB records in Crumb (1956) and Poole (1995) are assumed to be based on either a misidentification of *F. jocosa* (Guenée) or a mislabeled specimen. We limit the use of *F. deceptiva* to populations from the rainforests of southwestern BC and southward.

**Noctuidae – Oncocnemidinae**

E124 ***Sympistis chorda* (Grote, 1880)** – Reported in error from AB by Anweiler (2006b) and Schmidt (2007). The specimens in question are referable to *S. extremis* (Smith).

E125 ***Sympistis fifia* (Dyar, 1904)** – Misidentification by Bowman (1951); the series of his specimens in the UASM that were identified as *S. fifia* are all misidentified *S. dinalda* (Smith), which was until recently (Troubridge 2008) considered a subspecies of *S. infixa* (Walker). There is a chance that *S. fifia* could occur in the mountains of AB, and it is included as a probable AB species in the current checklist.

E126 ***Sympistis figurata* (Harvey, 1875)** – Reported in error by Bowman (1951), on the basis of a previous taxonomic arrangement. AB specimens previously identified as *S. figurata* have been corrected to *S. pallidior* (Barnes), which was recently recognized as a distinct species (Troubridge 2008). *Sympistis figurata* is known in Canada only from BC.

E127 ***Sympistis hayesi* (Grote, 1873)** – Reported in error by Bowman (1951), on the basis of a previous taxonomic arrangement; his specimens in the UASM are all referable to *S. sandaraca* (Buckett and Bauer), which had not been described at that time.

E128 ***Sympistis infixa* (Walker, 1856)** – This name has historically been applied to AB specimens, most recently by Troubridge and Lafontaine (2004), on the basis of a previous taxonomic arrangement. AB material is referable to *S. dinalda* (Smith), which was previously considered a subspecies of *S. infixa* but has recently been recognized as a distinct species (Troubridge 2008).

E129 ***Sympistis major* (Grote, 1881)** – Reported in error by Bowman (1951). His material is referable to *S. chons* Troubridge, which had not been described at that time. True *S. major* is a southwestern species and does not occur in Canada.

E130 ***Sympistis sanina* (Smith, 1910)** – Reported in error from AB by Bowman (1951) and Hooper (1992). AB material is referable to *S. insanina* Troubridge, which was not described until 2008. *Sympistis sanina* does not occur in Canada.

E131 ***Sympistis simplex* (Smith, 1888)** – Bowman's (1951) record is assumed to be a misidentification. No AB voucher specimens are known for this species, which is not otherwise known from Canada.

**Noctuidae – Heliothinae**

E132 ***Pyrrhia umbra* (Hufnagel, 1766)** – Reported in error from AB by Bowman (1951), Crumb (1956), and Prentice (1962), on the basis of a previous taxonomic arrangement. These reports are all referable to *P. exprimens* (Walker), then thought to be a subspecies of *P. umbra* but now recognized as a full species. *Pyrrhia umbra* is a Palearctic species.

E133 ***Schinia lucens* (Morrison, 1875)** – Reported from "across the Prairie provinces to the Rocky Mountains" by Hardwick (1996), but no voucher specimens are known, and this record is assumed to be erroneous. *Schinia lucens* has been confirmed in Canada only as far west as MB.

E134 ***Schinia scutosa* ([Denis and Schiffermüller], 1775)** – Erroneous record by Bowman (1951), on the basis of a previous taxonomic arrangement. The name *S. nuchalis* (Grote) has recently been recognized and has been applied to North American populations previously treated as *S. scutosa* (Hardwick 1996). *Schinia scutosa* is strictly Palearctic (Fibiger and Hacker 2005).

**Noctuidae – Noctuinae**

E135 ***Agnorisma bollii* (Grote, 1881)** – Bowman's (1951) record is assumed to be an error; no voucher specimens are known, and *A. bollii* is otherwise restricted to the eastern United States.

E136 ***Apamea alticola* (Smith, 1898)** – Reported from AB in error by Bowman (1951), as *Crymodes maillardi alticola*, due to a previous taxonomic arrangement. At the time, the name *C. maillardi* (Geyer) was applied to North American material that is currently referred to as *A. zeta* (Treitschke), and *alticola* was considered to be the western North American subspecies (as currently delimited *A. maillardi* is restricted to the Palearctic, see note E141 on that species). *Apamea alticola* was elevated to species status by Mikkola et al. (2009) and it does not occur in AB; it is restricted to the southern Rocky Mountain states of CO and NM.

E137 ***Apamea auranticolor* (Grote, 1873)** – Reported from AB in error by Bowman (1951), as *Septis* [=*Apamea*] *auranticolor sora* Smith, and *S. auranticolor barnesi* [sic: *barnesii*] Smith. These records are referable to *A. sora*; *A. auranticolor* is a closely related species that is restricted to the USA, and *barnesii* is a synonym of it.

E138 ***Apamea cinefacta* (Grote, 1881)** – Misidentification by Bowman (1951), on the basis of pale specimens of *A. commoda* (Walker).

E139 ***Apamea dubitans* (Walker, 1856)** – Bowman's (1951) record of *A. dubitans cogitata* (Smith) refers to what is now treated as a full species, *A. cogitata*. *Apamea cogitata* has often been confused with true *A. dubitans*, which is known to occur in eastern North America as far west as SK.

E140 ***Apamea lateritia* (Hufnagel, 1766)** – Erroneous record by Bowman (1951), on the basis of a previous taxonomic arrangement. North American populations traditionally treated as conspecific with Palearctic *A. lateritia* have recently been given species status as *A. scoparia* Mikkola, Mustelin and Lafontaine (Mustelin et al. 2000). *Apamea lateritia* is strictly Palearctic.

E141 ***Apamea maillardi* (Geyer, [1834])** – Erroneous record by Bowman (1951), as *Crymodes maillardi alticola* Smith, on the basis of a previous taxonomic arrangement. North American populations traditionally treated as *A. maillardi* have been revised to *A. zeta* (Treitschke) (Mustelin et al. 2000). *Apamea maillardi* is strictly Palearctic. See also note E136 on *A. alticola*.

E142 ***Anarta melanopa* (Thunberg, 1791)** – Erroneous record by Bowman (1951), based on a previous taxonomic arrangement. We treat North American populations traditionally treated as *A. melanopa* as *A. nigrolunata* Packard (see Appendix, entry A33) *Anarta melanopa* is found only in the Palearctic.

E143 ***Coranarta cordigera* (Thunberg, 1788)** – Erroneous record by Bowman (1951), based on a previous taxonomic arrangement. North American populations traditionally treated as *Anarta* (= *Coranarta*) *cordigera* have recently been revised to species status as *C. luteola* (Grote and Robinson) (Mustelin 2006). *Coranarta cordigera* is restricted to the Palearctic.

E144 ***Egira cognata* (Smith, 1894)** – Bowman's listing (1951) of *E. cognata* appears to have originated with Dyar (1902); the AB record was also repeated by Crumb (1956) and Godfrey (1972). This record is herein treated as a misidentification, as we are unable to locate a voucher specimen. This species is known in Canada only from BC.

E145 ***Egira hiemalis* (Grote, 1874)** – Reported from AB by Godfrey (1972), who apparently attributed the record to Crumb (1956), but there is no mention of any AB records in the latter publication. No AB voucher specimens are known of this species, and the record is considered erroneous. The host plant of *E. hiemalis* is Antelope Brush (*Purshia tridentata* (Pursh) DC.; Rosaceae), which, like the moth, is restricted in CAN to the Okanagan Valley of BC.

E146 ***Elaphria festivoides* (Guenée, 1852)** – North American members of the genus *Elaphria* have recently been revised (Pogue and Sullivan 2003), and AB populations previously referred to as *E. festivoides* (e.g., Bowman 1951; Saluke and Pogue 2000) have been described as a new species, *E. alapallida* Pogue and Sullivan. *Elaphria festivoides* is restricted to the southeastern United States.

E147 ***Enargia mephisto* Franclemont, 1939** – Reported for AB in CBIF (2003), this taxon was subsequently thought to constitute an 'erroneous' record for the province, as it proved to be the same taxon as what was thought to be *E. infumata*. Recent revision of the genus (Schmidt in press) has however shown that the concept of both species has been misunderstood, and two species do occur in AB, namely *E. infumata* (which includes previous concepts of *E. mephisto*) and a new species near *E. infumata*. These taxonomic changes occured too late to incorporate both species in this manuscript.

E148 ***Epidemas melanographa* Hampson, 1906** – Reported from AB by Bowman (1951), but these specimens have been tentatively redetermined as *E. obscurus* Smith, pending further work on the genus (J. Troubridge, personal communication).

E149 ***Euxoa costata* (Grote, 1876)** – Bowman (1951) reported this species as *E. costata idahoensis* (Grote). Both *E. idahoensis* and *E. costata* are now treated as full species; *E. idahoensis* occurs in AB, but *E. costata* does not (Lafontaine 1987).

E150 ***Euxoa fumalis* (Grote, 1873)** – Misidentification by Bowman (1951); his record is referable to *E. comosa* (Morrison). *Euxoa fumalis* is not known to occur west of ON.

E151 ***Euxoa redimicula* (Morrison, 1874)** – Erroneous record by Bowman (1951); his records are referable to *E. auripennis* Lafontaine, which had not been described at that time.

E152 ***Hyppa xylinoides* (Guenée, 1852)** – North American populations traditionally placed under this name have been recently revised to *H. contrasta* McDunnough (Troubridge and Lafontaine 2004). *Hyppa xylinoides* does not occur west of MB.

E153 ***Ipimorpha subvexa* Grote, 1876** – Specimens of *Ipimorpha* from the AB prairies have been referred to *Ipimorpha subvexa* (type locality: TX) (e.g., by Bowman 1951), segregated from *I. pleonectusa* Grote by paler wing color and a Great Plains distribution. In southern AB, phenotypes spanning the range from one form to the other occur, particularly in the southern foothills region. Lack of morphological and mitochondrial DNA differences (BCS, unpublished data) leads us to believe that AB specimens are ecophenotypes of the same species. A taxonomic review of *Ipimorpha* is needed to determine if this applies to other populations of "*I. subvexa*".

E154 ***Lasionycta conjugata* (Smith, 1899)** – Reported from AB by Bowman (1951), but AB populations belong to a very recently described species, *L. fergusoni* Crabo and Lafontaine. True *L. conjugata* was described from CO and is not known to occur in AB.

E155 ***Lasionycta staudingeri* (Aurivillius, 1891)** – Misidentification by Bowman (1951); his record is referable to *L. leucocycla* (Staudinger). *Lasionycta staudingeri* is known in Canada only from QC and the high Arctic.

E156 ***Lithomoia solidaginis* (Hübner, 1803)** – Erroneous records by Bowman (1951) and Prentice (1962), based on a previous taxonomic arrangement. These records are referable to *L. germana* Morrison (Kononenko et al. 1989). *Lithomoia solidaginis* is strictly Palearctic.

E157 ***Loxagrotis albicosta* (Smith, 1888)** – Reported from AB by Crumb (1956), but this record is assumed to be based on a misidentification. The nearest confirmed record of this species is from southern ID (Lafontaine 2004).

E158 ***Ochropleura plecta* (Linnaeus, 1761)** – This species has traditionally been considered to be Holarctic, but North American populations have recently been assigned species status as *O. implecta* Lafontaine (Lafontaine 1998). *Ochropleura plecta* is restricted to the Palearctic.

E159 ***Oligia violacea* (Grote, 1881)** – Erroneous record by Bowman (1951), based on a previous taxonomic arrangement. Populations in AB are referable to *O. rampartensis* Barnes and Benjamin, herein raised from synonymy with *O. violacea* (see Appendix, entry A28); *Oligia violacea* is restricted to the west coast of North America.

E160 ***Papaipema marginidens* (Guenée, 1852)** – Erroneous reports by Bowman (1951) and Crumb (1956), based on a previous taxonomic arrangement; their records are referable to *P. birdi* (Dyar), which at the time was considered a synonym of *P. marginidens*. *Papaipema marginidens* is not known to occur in Canada.

E161 ***Papestra invalida* (Smith, 1891)** – Misidentification by Bowman (1951); his record is referable to *P. brenda* (Barnes and McDunnough). Crumb's (1956) record, also assumed to be erroneous, was probably taken from Bowman (1951). *Papestra invalida* is known in Canada only from BC.

E162 ***Protogygia album* (Harvey, 1876)** – This name was traditionally applied to populations across western North America. However, populations occurring in the Rocky

Mountains and the prairies (including all AB populations) have recently been described as a separate species, *P. pallida* Fauske and Lafontaine (Lafontaine 2004). *Protogygia album* is restricted to the western United States.

E163 ***Resapamea morna* (Strecker, 1878)** – Bowman's (1951) record (as *Agroperina morna*) is assumed to be erroneous. *Resapamea morna* is not known from Canada, and no AB voucher specimens have been located. All BC voucher specimens previously identified as *R. morna* have recently been identified as *R. venosa* (Smith), which is not known from AB.

E164 ***Rhyacia quadrangula* (Zetterstedt, 1839)** – Bowman (1951) reported this species as *Caradrina quadrangula clemens* Smith. *Rhyacia clemens*, now considered a full species (Lafontaine 1998), occurs in the mountains of AB. *Rhyacia quadrangula* is a Holarctic tundra species that does not occur west of northern MB.

E165 ***Sericaglaea signata* (French, 1879)** – Misidentification by Bowman (1951); his records are presumed to be referable to *Epiglaea decliva* (Grote); see note 1998 on that species.

E166 ***Spaelotis havilae* (Grote, 1881)** – Erroneous records by Bowman (1951) and Crumb (1956). The genus was recently revised by Lafontaine (1998), and AB specimens were revised to *S. bicava* Lafontaine. *Spaelotis havilae* does not occur in Canada.

E167 ***Xanthia togata* (Esper, 1788)** – Erroneous record by Bowman (1951), based on a previous taxonomic arrangement. North American populations traditionally treated as *X. togata* or *X. lutea* (Ström), a synonym, have been revised to species status as *X. tatago* Lafontaine and Mikkola. *Xanthia togata* is restricted to the Palearctic.

E168 ***Xestia elimata* (Guenée, 1852)** – Erroneous records by Bowman (1951) and Prentice (1962), based on a previous taxonomic arrangement. The species *X. praevia* Lafontaine has recently been described, and this name has been applied to western North American populations previously considered to be *X. elimata*. *Xestia elimata* is restricted to eastern North America (Lafontaine 1998).

E169 ***Xestia laetabilis* (Zetterstedt, 1839)** – Erroneous record based on a previous taxonomic arrangement. The species *X. lupa* Lafontaine and Mikkola has recently been described, and this name applies to North American populations previously considered to be *X. laetabilis*. *Xestia laetabilis* is restricted to the Palearctic (Lafontaine 1998).

E170 ***Xestia sincera* (Herrich-Schäffer, 1851)** – North American populations traditionally treated as *Anomogyna* (= *Xestia*) *sincera* (e.g., by Bowman 1951) were described as a distinct species, *X. fabulosa*, by Ferguson (1965). *Xestia sincera* is restricted to the Palearctic.

E171 ***Xylotype capax* (Grote, 1868)** – Canadian populations traditionally included in *X. capax* are now recognized as a distinct species, *X. arcadia* Barnes and Benjamin. *Xylotype capax* (Grote) is restricted to the eastern United States.

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# Appendix:
# Taxonomic Changes to Lepidoptera

## BUTTERFLIES- Norbert G. Kondla and B. Christian Schmidt

### Hesperiidae

**A1. *Carterocephalus mandan* (Edwards, 1863) Revised Status**

The taxonomy of *Carterocephalus* in Canada and the United States was partially reviewed by Mattoon and Tilden (1998). We treat the taxon *mandan* as a species distinct from the boreo-montane taxon *palaemon* (Pallas) on the basis of genetic differences (in the *cox1* gene), phenotypic differences, and occurrences of strict sympatry observed by BCS and C. Guppy, in AB and BC respectively, and also on the presence of sympatric specimens in the CNC. We tentatively maintain the western cordilleran taxon as the subspecies *mackenziei* Wyatt of the presumed Holarctic species *C. palaemon* on the basis of superficial similarity and because nothing has been published to establish it as a junior subjective synonym of the subspecies *skada* (Edwards), but this arrangement is in need of reassessment. The limited molecular data given in Joyce and Pullin (2004) suggest that European and North American *palaemon* are distinct from one another, but the situation in Siberia has not been assessed.

**A2. *Hesperia manitoba* (Scudder, 1874) Revised Status**

This AB taxon has for the past 30 years often been listed in North American literature, including Bird et al. (1995), Layberry et al. (1998), and Pelham (2008), as a subspecies of the European *H. comma* (Linnaeus), on the basis of superficial similarity. It is treated herein as a full species, on the basis of phenotypic, biological, structural, and genetic differences (Scudder 1874; Lindsey et al. 1931; Forister et al. 2004). The North American Beringian populations (in AK and YT) await critical examination, but given the biogeographical considerations of Beringian species with Holarctic distributions, we retain the YK and AK populations as *H. comma*.

### Pieridae

**A3. *Colias elis* Strecker, 1885 Revised Status**

Although it has been treated as a subspecies of *C. meadii* Edwards by many recent workers, including Bird et al. (1995), Layberry et al. (1998), and Pelham (2008), we treat the taxon *elis* as a full species. This conclusion is based on morphological differences (Bean 1895), genetic differences (Wheat 2001), and unpublished ecological differences such as differences in flight behavior and habitat use. Curtis and Ferris (1985) also provided a detailed description of differences between these two taxa.

**Nymphalidae**

**A4. *Nymphalis j-album* (Boisduval and LeConte, [1835]) Revised Status**

This species is hereby recognized as distinct from the Eurasian *N. l-album* (Esper). These taxa have been treated as *Nymphalis vaualbum* ([Denis and Schiffermüller]) in most of the recent literature. As explained by Kudrna and Belicek (2005) and other authors going back almost 100 years, the name *vaualbum* is a *nomen nudum*, and the correct name for the Eurasian populations at the species level is *N. l-album*. However, a petition is currently before the International Commission on Zoological Nomenclature concerning various names from the work of Denis and Schiffermüller, and the status of this name may be changed. Lumping the North American *N. j-album* and Eurasian *N. l-album*, as proposed by Gillham (1956), is without merit. The two species are different in size, appearance, and genetics (specifically, in terms of the *cox1* gene; N. Wahlberg, personal communication; J. Belicek and NGK, unpublished data), and their geographic distributions are widely separated. Researchers on both continents have recently independently concluded that there are two species after all, as widely recognized before the paper by Gillham (1956).

**A5. *Euphydryas bernadetta* Leussler, 1920 Revised Status**

This taxon has most recently been treated as a synonym of *E. anicia* (Doubleday), but the taxonomy of the *anicia* group has been notoriously variable and will undoubtedly remain so for some time. In the Cypress Hills of AB, the taxa *bernadetta*, *anicia*, and *editha* (Boisduval) look and behave like three separate species (Schmidt et al. 2003). Molecular data (for the *cox1* gene) from sympatric Cypress Hills populations has revealed that no haplotypes are shared between *anicia* and *bernadetta*, at least in the samples analyzed to date, although *anicia* samples from various western North American sites are not monophyletic with respect to Cypress Hills *bernadetta* (NGK, unpublished data). Therefore, although it is likely that *anicia* and *bernadetta* are taxa with a very recent evolutionary split, we believe they are best treated as separate species, given that phenotypic, ecological, and genetic differences are maintained in sympatry. See also Scott et al. (2006) for recent taxonomic discussions, Holland (1931) who treated *bernadetta* as a distinct species, and Howe (1975) for additional discussion of these taxa.

**A6. *Speyeria leto* (Behr, 1862) Revised Status**

The taxa *S. leto* and *S. cybele* (Fabricius) were historically treated as distinct species until they were synonymized by dos Passos and Grey (1947), presumably on the basis of superficial similarity. AB populations were treated as subspecies of *S. cybele* by Bird et al. (1995). Reports of alleged intergradation in small areas of southern AB and MT have not been confirmed; if these exist, a more plausible interpretation would be that they represent very small zones of hybridization, since the change from *cybele* to *leto* phenotypes among populations is very abrupt in regions where these taxa come into contact in southern AB. Furthermore, *S. cybele pseudocarpenteri* (Chermock and Chermock) and *S. leto* fly in sympatry in the Sweetgrass Hills of MT, without evidence of intergradation. Species status is also supported by genetic differences in the *cox1* gene in a robust sample that has been analyzed by NGK (unpublished data).

**A7. *Boloria myrina* (Cramer, 1777) Revised Status**

We do not agree with the proposal of Clark (1941) that North American *B. myrina* be considered the same species as the Eurasian *B. selene* ([Denis and Schiffermüller]). The two species differ in appearance as adults (McDunnough (1932) having detailed one of several differences) and as larvae (NGK, unpublished data), and they differ genetically (for the "bar code" fragment of

the *cox1* gene; NGK, unpublished data). Furthermore, Oliver (1977) demonstrated genetic incompatibility between the two taxa in laboratory rearings.

**A8. *Coenonympha inornata* Edwards, 1861 Revised Status**
North American populations traditionally treated under the name *inornata* have often been placed within a broader concept of the European species *C. tullia* (Müller) (e.g., Layberry et al. 1998; Pelham 2008). Recently, Kodandaramaiah and Wahlberg (2009) used molecular evidence from three genes to conclusively show that North American taxa are not the same as the European species. We therefore revert to use of the name *C. inornata* for North American populations treated at the species level as *C. tullia* by Pelham (2008). North American *inornata* may represent more than one distinct species, but the relationships among these taxa have not been completely resolved.

## MACROMOTHS - B. Christian Schmidt and Gary G. Anweiler

### Geometridae

**A9. *Colostygia circumvallaria* (Taylor, 1906) Revised Status**
This taxon was treated as a subspecies of the European *C. turbata* (Hübner) by Ferguson (1983). However, differences in the shape of the male eighth sternite and aedeagus, wing pattern differences, and a 3.5% divergence in the *cox1* DNA barcode sequence shows that the two taxa should be treated as separate species.

**A10. *Xanthorhoe delectaria* Cassino and Swett, 1922 Revised Status**
This western taxon (type locality: Atlin, BC; paratype examined in the CNC), originally described as a subspecies of *X. ramaria* Swett and Cassino, is distinguished from *ramaria* by its larger size, darker coloration, and slightly longer and more elongate male calcar; in addition, the ventral surface of the postvaginal plate in the female is concave and scobinate, not flattened and smooth as in *ramaria*. Mitochondrial DNA divergence (in the "bar code" fragment of *cox1*) is about 1.5% between these two taxa, and the taxa occur together in YT. Consequently, we recognize them as separate species.

**A11. *Xanthorhoe lagganata* Swett and Cassino, 1920 Revised Status**
**= *Xanthorhoe incursata* var. *harveyata* Cassino and Swett, 1922 Revised Synonymy**
This taxon has previously been treated as a subspecies of *X. incursata* Hübner (type locality: Europe), but Beljaev and Vasilenko (2002) noted that *incursata* occurs only in central Europe, with a different species occurring in eastern Siberia. The genitalia of European *incursata*, as illustrated by Choi (2003), are quite different from those of *lagganata*, and are in fact closer to those of *X. ramaria* Swett and Cassino. The Siberian species, *X. derzhavini* (Djakonov, 1931), may be conspecific with *lagganata* (type locality: Laggan [now known as Lake Louise], AB). Reports of *lagganata* from YT and NT (Lafontaine and Wood 1997) are referable to *X. ramaria* and *X. delectaria* Cassino and Swett; confirmed occurrence of *X. lagganata* is currently limited to higher elevations from southwestern BC to southwestern AB. The taxon *harveyata* (type locality: Vancouver, BC) falls within the variation of AB *lagganata* and is therefore retained as a synonym.

**A12. *Xanthorhoe algidata* (Möschler, 1874)**

**= *Xanthorhoe dodata* Cassino and Swett 1920 New Synonymy**

The taxonomic affinity of the taxon *dodata* was unclear for many years, since the group has never been revised, and no specimens have been identified as *X. dodata* since the original description. However, examination of the holotype genitalia (in the MCZ) showed that it is the same species as *X. algidata*, now known to occur across the boreal region from eastern Canada to the AB foothills.

**A13. *Scopula quinquelinearia* (Packard, 1870) Revised Status**

This taxon was treated as a subspecies of *S. junctaria* (Walker) by Covell (1970). The two taxa are sympatric in southwestern AB (Waterton–Crowsnest Pass region), without evidence of intergradation. Molecular data indicate a divergence of about 1.5% (in the "bar code" fragment of the *cox1* gene of mitochondrial DNA) between these two southern mountain populations. We therefore revert to treating both as full species.

**A14. *Macaria signaria* (Hübner, 1809)**

**= *Melanolophia unipunctaria* W. S. Wright, 1916 New Synonymy**

**= *Semiothisa marmorata* Ferguson, 1972 New Synonymy**

**= *Macaria? submarmorata* Walker, 1861 New Synonymy**

Ferguson (1974) recognized five species of the *signaria* complex (*signaria*, *unipunctaria*, *marmorata*, *submarmorata*, and *oweni* (Swett)) as occurring in western Canada, basing his taxonomic interpretation to a large extent on specimens, especially western material, reared by the Canadian Forest Service's Forest Insect and Disease Survey (held in the CNC). Ferguson's subsequent treatment of the *signaria* group (Ferguson 2008) remained largely unchanged from that of his 1974 revision, although he conceded that it was not always possible to segregate western BC specimens of *signaria* and *unipunctaria*. The taxon *signaria* was characterized as feeding on a wide variety of conifer species with transcontinental distributions; *unipunctaria* specializing on Douglas-fir and accordingly limited to the western region; *marmorata* (= *banksianae* (Ferguson)) feeding on Lodgepole Pine and Jack Pine, which have transcontinental distributions; *submarmorata* feeding on larch species, which are also widely distributed; and *oweni* being a specialist on Eastern Larch, which occurs east of the Rocky Mountains. No structural differences (genitalic or otherwise) exist between these species, and diagnostic distinction depends on subtle differences in wing size and pattern, which are geographically and locally quite variable.

Unfortunately, Ferguson's untimely death prevented him from examining additional field-collected material now available from AB and BC. This recently collected material (particularly from multiyear faunistic inventories at the same sites) and extensive fieldwork throughout AB and BC provide mounting evidence that only two species (*M. signaria* and *M. oweni*), rather than five, occur in western Canada. In central AB, series of *Macaria* specimens collected over a number of years from various forest types, consisting predominantly or exclusively of one conifer species (Eastern Larch fens, Jack Pine sand dunes, or White Spruce stands), cannot reliably be segregated into discrete phenotypes (exclusive of *M. oweni*). Similarly, comparisons of specimens from montane Douglas-fir and spruce–pine forest in the central AB foothills show a single taxon varying in phenotype from *signaria* to *unipunctaria*. Molecular comparisons among hundreds of specimens, representing all *signaria*-group phenotypes from across North America, exhibit very low genetic variation (BCS and J. R. deWaard, unpublished data). For *signaria*, *unipunctaria*, *marmorata*, and *submarmorata*, there appears to be no genetic

structuring on the basis of geography or phenotype, with different phenotypes often exhibiting identical haplotypes; a re-evaluation of the taxonomic status of *M. fissinotata* (Walker) and *M. pinistrobata* (Ferguson) is also needed (BCS and J. R. deWaard, unpublished data). We therefore treat *M. signaria* as a widespread, polytypic species exhibiting both broad-scale geographic variation and regional-scale, host-mediated variation. For example, at the broad geographic scale, specimens of the western cordilleran populations are larger, as are those of the southern Appalachian populations initially described as *M. fraserata* (Ferguson). In terms of regional or even local variation, the maintenance of phenotypic variation in *M. signaria* would certainly be an evolutionary advantage. Crypsis against the bark of various host species would be necessary, and predator selection against noncryptic individuals in populations that rely on a single host would be expected to be relatively rapid. Although taxonomically challenging, this group would provide an excellent candidate group for the study of speciation and host-choice diversification.

**A15. *Speranza occiduaria* (Packard, 1874)**

**= *Diastictis andersoni* Swett, 1916 New Synonymy**

*Speranza andersoni* was described from Atlin, BC, and occurs across the boreal region to the Atlantic provinces. *Speranza occiduaria* (type localities: OR, CO) has a similar transcontinental distribution but generally occurs further south and has been treated as a separate species because the adults are yellow rather than gray and because *andersoni* feeds on *Vaccinium* spp. (Ericaceae) whereas *occiduaria* feeds on a variety of other shrubs (McGuffin 1972; Ferguson 2008). The presumed restricted host use of *andersoni* seems to be based on a single larva reared from *Vaccinium* in NS by Ferguson (1953). We treat *andersoni* as a color form of *occiduaria*, as these taxa are morphologically identical (McGuffin 1972) and because populations in the AB foothills can produce males of the *andersoni* form, although the females are of the *occiduaria* form; populations west of Calgary exhibit phenotypes ranging from one form to the other. Both forms have the same mitochondrial DNA "bar code" sequence.

**A16. *Spodolepis danbyi* (Hulst, 1898) Revised Status**

The taxon *danbyi* (type locality: Rossland, BC) has been treated most recently as a junior subjective synonym of *S. substriataria* Hulst, 1896 (type locality: Franconia, NH). Differences in morphology and mitochondrial DNA sequence between western cordilleran and boreal–transcontinental populations indicate that these two taxa represent different species. The female corpus bursae of *danbyi* is only two-thirds as long as that of *substriataria*, with a smaller, ventrally located signum (right laterad in *substriataria*) that has a smooth (rather than dentate) border. Differences in wing pattern and color are subtle, but relative to *substriataria*, *danbyi* is more cold gray in color and lacks the faint yellowish brown cast often present in *substriataria* (especially ventrally), and the forewing pattern is more often well defined and the antemedian line less sinuate than in *substriataria*. Specimens from cordilleran and boreal populations show an average divergence of about 4% in the "bar code" fragment of *cox1* mitochondrial DNA. The name *danbyi* (= *Cleora demorsaria* Strecker, 1899) is available for the western species.

**Saturniidae**

**A17. *Hyalophora gloveri* (Strecker, 1872) Revised Status**

Inaccurate and erroneous information regarding the distribution of *Hyalophora* in western Canada has led to considerable confusion as to which species occur where. Bowman (1951) listed three species from AB: *H. gloveri, H. columbia* (Smith) and *H. cecropia* (Linnaeus). Tuskes et al. (1996) depicted *H. euryalus* (Boisduval) *"kasloensis"* (a unique phenotype that probably resulted

from past hybridization between *euryalus* and *gloveri*) as occurring throughout western AB, but, curiously, excluded the northern range portions of *H. euryalus* and "*H. columbia gloveri*". There is no evidence of *H. euryalus* or *euryalus*-like phenotypes occurring in AB: specimens from the Crowsnest Pass in the southern mountains are like typical prairie *gloveri*, and the genus *Hyalophora* is absent from the foothills and mountains from the Crowsnest Pass north. The taxon *gloveri* occurs throughout the boreal forest region (east of the Rockies), northwest to Fort St. John, BC (Cannings and Guppy 1989), and north to Hay River, NT (specimens in the CNC). A series of six *euryalus* from Prince George, BC (specimens in OLDS), are very dark, with reduced discal spots on the hindwing, and appear to be intermediate between *euryalus* and *gloveri*; these specimens probably mark the northern terminus of the range of *euryalus*.

Although Ferguson (1972a) treated *gloveri* as a species separate from *columbia*, Collins (1973) synonymized the two, and this interpretation has been followed by subsequent authors (e.g., Lemaire 1978; Tuskes et al. 1996; Collins 1997). As detailed by Tuskes et al. (1996), the two taxa are distinguished by larval food-plant preference (*columbia* on Tamarack, *gloveri* on deciduous shrubs), habitat preference (*columbia* in Tamarack bogs, *gloveri* in a wide variety of xeric to moderately xeric habitats other than dense forest), larval phenotype (specifically the color of the scoli), adult phenotype (*columbia* small and melanic, *gloveri* larger and brighter) and geographic range (*columbia* from the Great Lakes region east to the Atlantic seaboard, *gloveri* from eastern MB west).

The presence of zones of phenotypic blending and hybrid fertility and the discordance of adult phenotypes with supposed diagnostic larval host associations led Collins (1973) and Tuskes et al. (1996) to conclude that these taxa are best treated as populations of a single species. However, extensive fieldwork, rearing, examination of recently collected material from western Canada, and mitochondrial DNA sequence data indicate that a re-evaluation of this conclusion is warranted, as described below.

Zones of phenotypic blending: Two areas have been identified as supposed blend zones, the Flin Flon region of east–central MB and the Lake of the Woods region of southeastern MB and northwestern ON (Collins 1973; Kohalmi and Moens 1975, 1988), with the intervening region assumed to harbor similarly phenotypically intermediate populations. The existence of the Flin Flon blend zone was based on quantification of dark scaling of the forewing in 12 male specimens, in which dark scaling was, on average, intermediate between those of populations from the Lake of the Woods (darker) and southwestern MB (lighter) regions; notably, the Flin Flon specimens were larger than samples from both of the southern MB regions (Collins 1973). The phenotypes of AB populations of *gloveri* are similarly darker and often larger in the parkland and boreal regions than in the prairie regions, as might be expected for cooler, moister habitats. Two of the specimens from the Flin Flon region were illustrated by Tuskes et al. (1996), and these are indistinguishable from *gloveri* from central AB. There is no evidence of Tamarack-feeding populations from west of southeastern MB, whereas *gloveri* that feed on *Salix* spp. (Salicaceae), *Prunus* spp. (Rosaceae), and *Eleagnus* spp. (Eleagnaceae) occur throughout the boreal region in AB north to at least Hay River, NT (McGugan 1958; specimens in CNC and NFRC; GGA and D. Macaulay, personal communication). Extensive collecting in central and northern AB has indicated that the genus *Hyalophora* is absent from Tamarack peatland habitats. This conclusion is supported by the lack of *Hyalophora* records from Tamarack in western MB, central SK, and AB, from the extensive larval collections made by the Canadian Forest Service's Forest Insect and Disease Survey (the survey documented hundreds of larval collections and thousands of specimens of other species from Tamarack in the area (McGugan 1958)). More importantly, *gloveri* does occur throughout the western boreal forest region in

open or lightly wooded areas where host shrubs, particularly *Prunus virginiana* L. (Rosaceae) are common (D. Macaulay and BCS, unpublished data); preferred boreal habitat consists of Jack Pine sandhills, granite uplands, and lake shores. In summary, characterization of the blend zone as extending to the Flin Flon area is based on interpretation of the phenotype of just 12 specimens (Collins 1973). These specimens are indistinguishable from boreal–central AB specimens, which do not feed on Tamarack and which do not look like *columbia*; given these features, together with the lack of evidence of Tamarack-feeding larvae occurring northwest of southeastern MB, the most parsimonious conclusion is that populations in Flin Flon and SK are boreal, deciduous-feeding *gloveri*, not intergrades or larch-feeding *columbia*. The Lake of the Woods region therefore appears to be the only substantiated contact zone between these two taxa. Phenotypes matching both taxa, in addition to intermediate ones, occur (Collins 1973), and larvae have been collected from Tamarack (specimens in the CNC; see also McGugan (1958)), confirming the presence of true *columbia*. Larvae from the Lake of the Woods region appear to exhibit a color polymorphism (Kohalmi and Moens 1975). Although this blend zone is larger in area than known hybridization zones between *euryalus* and *gloveri*, a broader hybridization zone would be expected in the relatively geographically and ecozonally simple boreal plain than in the complex mountainous west where *gloveri* and *euryalus* contact one another. More importantly, this relatively small (relative to the total ranges of *gloveri* and *columbia*) blend zone would *not* be expected if *columbia* had diverged in postglacial times, but *would* be expected if this is a postsecondary contact zone following range expansion from Great Plains (*gloveri*) and Great Lakes (*columbia*) glacial refugHybrid fertility: First-generation ($F_1$) female offspring resulting from hybrid crosses of *Hyalophora* often exhibit reduced fertility (Collins 1997). Despite the extensive hybridization experiments that have been carried out with *Hyalophora*, the only published data on the viability of $F_1$ females resulting from a *gloveri* (from UT) × *columbia* (from MI) cross are for three females cited in Collins (1973), which were reported to have "over 90%" fertility. Although hybrid fertility relative to other *Hyalophora* may be informative in the evolutionary history of closely related species, artificial hybridization in and of itself does not necessarily indicate conspecificity. The prevalence of natural hybridization events between *gloveri* and *columbia* remains unknown. Assuming that the Lake of the Woods *gloveri–columbia* hybrid zone has been correctly interpreted, it is still relatively small, comparable to the contact zones between *gloveri* and *euryalus* in MT and ID (Collins 1997).

Larval host plants: As mentioned above, the confirmed natural hosts of *gloveri* larvae in the Prairie provinces consist of deciduous shrubs. In captivity, larvae also develop normally when forced to feed on Tamarack (D. Macaulay, personal communication). Similarly, *euryalus* larvae, although preferring deciduous shrubs, also use Douglas-fir under natural conditions (Collins 1997). Although Tamarack is the only reported natural host of *columbia*, the larvae develop normally when forced to feed on *Salix* spp. (J. Troubridge, personal communication), but die if only *Prunus* spp. are available (Scriber and Grabstein 1991). *Hyalophora cecropia* can also develop on Tamarack, but not on Douglas-fir (Tuskes et al. 1996). Therefore, the simplest evolutionary explanation for host use in *Hyalophora* is that the ability to feed on conifers is an ancestral trait, retained (to varying extent) in all species. It is also worth noting that the significance of Tamarack specialization in *columbia* versus deciduous polyphagy in *gloveri* should be interpreted in light of female host-finding and oviposition cues, not only larval host suitability.

In addition to these three features, preliminary results of molecular studies show that at least some *gloveri* populations are nearly as divergent from *columbia* (1.6%) as *gloveri* is from *euryalus* (1.7%), and the difference is surprisingly similar to that between *columbia* and *cecropia* (1.4%) (all values represent uncorrected distances based on the "bar code" fragment

of *cox1* in the mitochondrial DNA). Collins (1973) postulated that *gloveri* and *columbia* diverged relatively recently, following the Wisconsinan deglaciation 14 000 to 11 000 years ago. Collins (1997) proposed that the *columbia–gloveri* ancestor occupied montane habitats of the southwestern United States during the maximum extent of glaciation (about 17 000 years before present), feeding on deciduous shrubs, with the range of *columbia–gloveri* expanding northward and eastward following deglaciation. He postulated that ancestral *columbia–gloveri* adapted to feeding on Tamarack in the boreal region, and were then isolated from prairie *gloveri* by the northward expansion of the grasslands during the hypsithermal period about 8 000 years before present (Collins 1997). According to this scenario, a transition to the Tamarack-feeding *columbia* would be expected throughout the boreal region, which, as discussed above, is not the case. Furthermore, the scenario of ancestral *columbia–gloveri* stock switching to Tamarack-feeding as a way to expand their range into pioneer habitats left by retreating glaciers is counterintuitive, because conifers and other larger trees are not pioneer species; shrubs such as *Salix* spp., *Alnus* spp., *Prunus* spp., and *Populus* spp. would have become established well before conifers became dominant in these habitats. There was very little (if any) boreal forest habitat at the southwestern edge of the continental ice sheets in the northwestern Great Plains during maximum glaciation and deglaciation; instead, pollen evidence shows that this was deciduous shrubland and tundra or grassland (Strong and Hills 2005). The expansion of deciduous-feeding *gloveri* northward through the Great Plains after deglaciation is therefore much more plausible. Tamarack-feeding *columbia* probably occupied a refugium south of and adjacent to the Great Lakes (immediately to the south of the present-day core range), where Tamarack has subsisted for at least 23 000 years (Davis 1983; Strong and Hills 2005).

The current distribution and host use, the limited phenotypic blend zone, and the relatively large divergence in mitochondrial DNA provide stronger support for a much older divergence between *columbia* and *gloveri*, whereby *columbia* occupied an eastern North American refugium during the Wisconsinan glaciation and *gloveri* a western one, with subsequent range expansion and secondary contact following deglaciation. Additional molecular work would be informative in ascertaining divergence ages within *Hyalophora* and could also shed light on the prevalence of hybridization near the contact zone.

Given the limited extent of the contact zone, genetic divergence, and the ecology of western boreal *gloveri* populations, the divergence between *gloveri* and *columbia* is older than previously believed, and we therefore recognize them as separate species (although undoubtedly sister taxa).

**Sphingidae**

**A18. *Smerinthus ophthalmica* Boisduval, 1855 Revised Status**

We arrange the AB populations of *Smerinthus* "*cerisyi*" into two species, the southern prairie–mountain (Crowsnest Pass southward) populations as *S. ophthalmica* (type locality: San Francisco, CA) and the boreal–mountain populations as *S. cerisyi* Kirby (type locality: North America; limited to New York State by Eitschberger (2002)). Rothschild and Jordan (1903) revised *ophthalmica* to a subspecies of *S. cerisyi*, and Hodges (1971) treated it as a straight synonym of *S. cerisyi*; the latter taxonomic view has generally been followed since (Tuttle 2007). A notable exception is the work of Eitschberger (2002), who raised three taxa (*astarte* Strecker, *vancouverensis* Butler and *ophthalmica*) from synonymy under *S. cerisyi*, in addition to considering two specimens from the Columbia Icefields, AB, as possibly representing yet another species. Eitschberger (2002) qualified his taxonomic decisions by rather vague statements like "Based on genitalic structure, clearly a good species" (Eitschberger 2002, page 94), while failing

to examine specimens of both *astarte* and *vancouverensis* from the regions of the type localities (CO and Vancouver Island, BC, respectively). Given the variation in genitalic structure in *cerisyi* (*sensu lato*) (BCS, unpublished data) and the lack of diagnostic genitalic features, as noted by Rothschild and Jordan (1903), Eitschberger's (2002) work is underwhelming at best, and the taxonomic changes pertaining to North American taxa were appropriately countered by Tuttle (2007).

Despite the shortcomings of Eitschberger's (2002) interpretation of the *cerisyi* group, it appears he was partially correct (although for the wrong reasons). Relative to *cerisyi*, *ophthalmica* is distinguished by a pale brown phenotype prevalent in prairie populations (which often co-occur with darker phenotypes; the pale phenotype does not occur in *cerisyi*), a less scalloped margin on the forewing, less scalloped and "smoother" postmedian lines on the forewing, a sharper angle of the antemedian line, and narrower serrations of the male antennae, as well as surprisingly large mitochondrial DNA divergence (in the *cox1* gene) between AB populations of these taxa, averaging about 3.5%. The phenotypic variation present in this group has previously been assumed to represent clinal intraspecific variation from western into boreal phenotypes. This appears to be the case only in the central foothills region (Crowsnest Pass to Banff), where many specimens are phenotypically intermediate, presumably indicating a contact or hybrid zone between the western and boreal taxa. However, the broad geographic transition from the boreal to the prairie region (i.e., aspen parkland) shows no such intergrades, and an abrupt change occurs from *cerisyi* phenotypes in the parkland and central prairies to *ophthalmica* in the southern prairie. In the prairie region, *cerisyi* occurs south to at least Tolman Bridge Provincial Recreation Area and east to Nevis, whereas typical *ophthalmica* occurs northwest to at least Dinosaur Provincial Park, a distance of about 60 km to the nearest known *cerisyi* populations. Collections from intervening areas would be very informative. There is no indication that *ophthalmica* is an ecologically induced phenotype, since only typical *cerisyi* are present in the hot, arid badlands of both the Red Deer River in central AB and the Peace River Canyon, both regions known for the occurrence of typically Great Plains species. The phenotypic variation in CA and CO populations of *ophthalmica* was summarized by Comstock and Dammers (1943), who documented the pale tan and brown form occurring among siblings. Their interpretation of phenotypic variation extended to CO populations (*astarte*), and they accordingly treated *ophthalmica*, *astarte*, and *saliceti* Boisduval as subspecies of *cerisyi*. This situation has been cited as further proof of *ophthalmica* and *cerisyi* being conspecific (Tuttle 2007). Examination of specimens from the Rocky Mountains in CO shows that they are consistent with *ophthalmica* (*sensu novo*), but are not the same taxon as the boreal (nominal) *cerisyi*, which was not examined by Comstock and Dammers (1943). The taxonomy and biogeography of this group is in need of additional study, as it seems clear that more than one species is involved. It is indeed possible that the prairie taxon is a species separate from both the southern mountain and boreal populations, related to or conspecific with *saliceti*. Antennal structure, wing phenotype, and mitochondrial DNA indicate a closer relationship of these southern AB populations to *saliceti* than to *cerisyi* (BCS, unpublished data); the extremely variable genitalic structure has so far not provided useful characters, but AB would certainly be the place to study this fascinating and beautiful group.

**Notodontidae**

**A19. *Furcula borealis* (Guérin-Méneville, 1844) Revised Status**

Schintlmeister (2008) listed *F. borealis* as a synonym of *F. bicuspis* (Borkhausen, 1790), thereby treating the latter as a Holarctic species. Although *F. borealis* and *F. bicuspis* may be closely related, *F. borealis* is, for two reasons, an unlikely candidate for Holarctic species status: it

occurs only in eastern deciduous and southern boreal forests, and its larvae feed on cherry (*Prunus* spp.). The Holarctic status of the Noctuidae was studied in detail by Mikkola et al. (1991), who concluded that the majority of species with a Holarctic distribution were tundra species and that only about 4% (22 of 550) of southern boreal–deciduous forest species were Holarctic, only two of which feed exclusively on deciduous trees or shrubs (both Salicaceae). Moreover, no *Prunus*-feeding noctuids or geometrids are known to be naturally Holarctic, and continuous Asian–American deciduous forests that would have permitted faunal interchange have not existed for at least 6 million years. We therefore revert to the long-standing use of *F. borealis* for the North American populations, until a thorough evaluation of morphological and molecular characters can be carried out.

**A20. *Furcula occidentalis* (Lintner, 1878) Revised Status**

*Furcula occidentalis* was treated as a subspecies of the Eurasian *F. furcula* (Clerck, 1759) by Schintlmeister (2008). As discussed in note 1585 for this species, evidence is mounting that there is more than one species under nominal *F. occidentalis* in North America. It is therefore unclear which, if any, of the North American taxa are conspecific with *F. furcula*, and we revert to the long-standing use of *F. occidentalis* for the North American populations until this issue can be further studied.

**Erebidae**

**A21. *Idia* Hübner 1813**

**= *Reabotis* Smith, 1903 New Synonymy**

***Idia immaculalis* (Hulst, 1886) New Combination**

The genus *Reabotis* Smith, 1903 was erected solely on the basis of *Botys immaculalis* Hulst, and the genus was not associated with other genera in the subfamily Herminiinae but rather with genera now included in the subfamily Catocalinae (*Scoleocampa* Guenée, *Pseudorgyia* Harvey, and *Gabara* Walker). *Reabotis* was not associated with the Herminiinae until McDunnough (1938c) placed it next to *Camptylochilo* Stephens, a synonym of *Idia* Hübner. Franclemont and Todd (1983) placed *Reabotis* after *Idia*.

Although *Idia immaculalis* is a distinctive species with immaculate, shiny-buff wings and an overall form reminiscent of a geometrid, all other structural characters, including the shape and position of the numerous pouches on the vesica, suggest that *Reabotis* is not structurally distinct from *Idia* but is in fact a member of the *Idia occidentalis* (Smith) species group. *Idia occidentalis* was recently raised to species status by Mustelin (2006). The male genitalia of *I. immaculalis* are most similar to those of *I. occidentalis*. The "bar code" fragment of the *cox1* gene also shows a high similarity (about 97%) between *immaculalis* and *occidentalis*. On the basis of these data, we treat *Reabotis* as a synonym of *Idia*.

**A22. *Caenurgina crassiuscula* (Haworth, 1809)**

**= *Caenurgina distincta* (Neumoegen, 1884) New Synonymy**

Over the course of several years, rearing and crossbreeding experiments carried out at the Agriculture Canada Central Experimental Farm (J. D. Lafontaine, unpublished data) revealed that *C. distincta* (type locality: "Belly River, BC" [actually in AB]) are the small, poorly marked adults of the spring generation of *C. crassiuscula* (type locality: reported as "England" [but actually eastern NA]). Crosses of breeding stock from the prairies, ON, and Vancouver Island showed no reduction in fertility or mating success. We therefore consider *distincta* a synonym of *C. crassiuscula*.

**Noctuidae**

**A23. *Tarache augustipennis* Grote, 1875**

**= *Conacontia flavicosta* Smith, 1900 New Synonymy**

*Conacontia flavicosta* (type locality: CO) has been treated as a species separate from *T. augustipennis* (as *Therasea flavicosta*) and was included as such by Franclemont and Todd (1983). Series of specimens from a number of western North American locations (specimens in the CNC) have revealed that *T. augustipennis* exhibits significant local variation in the extent of the pale costal area of the forewing. Lack of corresponding morphological, ecological, and molecular variation leads us to conclude that *Conacontia flavicosta* is a form of *T. augustipennis*, which has until recently been placed in the genus *Therasea* (Lafontaine and Poole in press).

**A24. *Acronicta dactylina* Grote, 1874**

**= *Acronicta hesperida* Smith, 1897 New Synonymy**

The taxon *hesperida* Smith (type locality: Seattle, WA) has been treated as the western counterpart to *A. dactylina* (type locality: NY, QC), but examination of series of specimens from western Canada shows that these are variable forms of the same species. The genitalic structure is identical for the eastern and western forms, and molecular data support a single-species interpretation. We therefore treat *dactylina* and *hesperida* as a single species.

**A25. *Acronicta cyanescens* Hampson, 1909 Revised Status**

We consider *A. cyanescens* to be distinct from *A. lepusculina* Guenée because these taxa remain distinct in sympatry in the Pacific Northwest. The larvae of *A. cyanescens* feed on Snowbrush (*Ceanothus velutinus* Douglas; Rhamnaceae) (Miller and Hammond 2003), whereas *A. lepusculina* larvae feed on poplar and willow. However, *A. cyanescens* has recently been found in YT, where Snowbrush does not occur. The larvae of the two species are quite different in appearance, with *A. cyanescens* exhibiting longer, "swirled" yellowish white hairs (illustrated in Miller and Hammond 2003) and lacking the dorsal black hair pencils of *A. lepusculina* (Ives and Wong 1988; Wagner 2005). More data are needed to determine if these larval differences hold up with larger samples. *Acronicta lepusculina* occurs in North America from coast to coast, whereas *A. cyanescens* is confined to the west, where it occurs from YT, BC and southwestern AB to NM.

**A26. *Acronicta grisea* Walker, 1856**

**= *Acronicta tartarea* Smith, 1903 New Synonymy**

Smith named *A. tartarea* on the basis of one male specimen collected by F. H. Wolley Dod at the head of Pine Creek (near Priddis, AB), stating that it resembled a small, dark-colored *A. grisea*. Examination of the *A. tartarea* holotype (held in the AMNH) has revealed that it is indeed a dark variant of *A. grisea*.

**A27. *Acronicta lupini* Grote, 1873**

**= *Merolonche ursina* Smith, 1898 New Synonymy**

Comparison of typical *ursina* (type locality: CO) and *lupini* (type locality: CA) with specimens from western Canada shows that these taxa are phenotypically and morphologically indistinguishable, and we therefore treat them as a single species. This interpretation is supported by molecular data, since *cox1* mitochondrial DNA shows little or no difference for the "bar code" fragment between Atlantic (NL) and western cordilleran (BC, CA) populations of *A. lupini*. *Merolonche* was synonymized with *Acronicta* by Lafontaine and Schmidt (in press).

**A28. *Oligia rampartensis* Barnes and Benjamin, 1923 Revised Status**

This species differs from *O. violacea* (Grote) in having pink rather than white hindwings, in having a creamy white or pinkish white thorax without the central orange–red tuft characteristic of *O. violacea*, and by differences in the male genitalia. *Oligia rampartensis* (type locality: Lillooet, BC) occurs from BC and AB southward to the central Sierra Nevada in CA, whereas *O. violacea* (type locality: CA) occurs from BC southward in the Pacific Coast states to southern CA.

**A29. *Fishia yosemitae* (Grote, 1873)**

**= *Fishia enthea* Grote, 1877 New Synonymy**

**= *Fishia betsia* Smith, 1905 New Synonymy**

**= *Fishia instruta* Smith, 1910 New Synonymy**

This group of taxa has been treated as consisting of four species with ranges centered on the western cordilleran region (*yosemitae*), Great Basin (*betsia*), Great Plains (*instruta*) and the boreal region (*enthea*). Although geographically separate populations of this group show differences in wing color and pattern contrast, they are morphologically identical. Samples from key geographic regions indicate clinal variation in wing pattern. Populations in AB are particularly relevant in this respect, since transitions between the mountain, boreal, and prairie faunas occur here. Most specimens from the prairies and southern foothills are intermediate between *yosemitae* and *instruta* phenotypes, and populations from transition zone habitats across the prairie region (Calgary, Lloydminster, Saskatoon, and Cartwright; specimens in the CNC) are phenotypically intermediate between the lighter prairie *yosemitae/instruta* phenotypes and the boreal *enthea* phenotype. Genitalic comparisons of *instruta* (type locality: De Clair, MB), *enthea* (type locality: ME), *yosemitae* (type locality: CA), and *betsia* (type locality: Stockton, UT) have revealed no morphological differences. Molecular data for the *cox1* gene ("bar code" fragment) has shown sharing of haplotypes among the *instruta, yosemitae*, and *enthea* phenotypes, with less than 1% total variation among samples of *instruta* (AB), *yosemitae* (BC, WA, WY, AB), and *enthea* (AB, ON). We therefore treat these taxa as a single species under the oldest name, *F. yosemitae*. The genus *Fishia* is in need of revision.

**A30. *Sutyna privata* (Walker, 1857)**

**= *Anytus profundus* Smith, 1900 New Synonymy**

*Sutyna profundus* (type locality: Brandon, MB) has been separated from *privata* (type locality: unknown [eastern NA]) by the slightly darker ground color of the forewing, which gives it a less contrasting overall pattern than *privata*. Phenotypes are highly variable across the Prairie provinces, and many specimens from transition zones are phenotypically intermediate between the two extremes. This variation, combined with the lack of structural and molecular (*cox1* mitochondrial DNA) differences, lead us to treat this as a single species

**A31. *Mniotype ducta* (Grote, 1878)**

**= *Xylophasia versuta* Smith, 1895 New Synonymy**

As noted by Forbes (1954), *versuta* (type locality: Calgary [probably head of Pine Creek near Priddis], AB) is a slightly paler form of *M. ducta* (type locality: ME) that occurs in the northern Great Plains, and the two are not distinguishable morphologically. Hence, we treat these as a single species. This species is difficult to distinguish from *M. tenera* (Smith) outside of the Great Plains, and in fact the two original syntypes of *versuta* represented both *versuta* and *tenera*. The lectotype of *versuta* was dissected and designated by Franclemont (in Forbes 1954), leaving little doubt as to its true identity. For clarification of the type material pertaining to Smith's taxa, see Todd (1982). Forbes (1954) provided a key based on male genitalic characters.

**A32. *Mniotype tenera* (Smith, 1900)**
**= *Xylophasia miniota* Smith, 1908 New Synonymy**
**= *Hadena ferida* Smith, 1908 New Synonymy**

As first suggested by Forbes (1954), *tenera*, *miniota* and *ferida* represent forms of the same species, differing only in average size and wing color. Examination of the type female of *miniota* (type locality: Miniota, MB) revealed that it is the same species as *M. tenera* (J. D. Lafontaine, personal communication), described from Kukak Bay, AK and *ferida* (type locality: NL).

**A33. *Anarta nigrolunata* Packard, 1867 Revised Status**

We do not agree that *Anarta nigrolunata* should be treated within a Holarctic concept of the species *A. melanopa* (Thunberg). Examination of genitalia preparations from various areas in the range of *melanopa* (e.g., Finland, Austria, Switzerland, the Altai Mountains of Russia, and Japan) and comparison with similar preparations from North American (specifically from YT, BC, NH, and Labrador) have revealed numerous consistent differences (J. D. Lafontaine, personal communication), which warrant recognition of at least two species. In particular, the sclerite that extends from the digital plate at the costal angle of the valve anteroventrally to the ventral margin of the sacculus differs; this sclerite has a strong wave forming the shape of a W where it fuses to the ventral margin of the saccular extension in *melanopa,* but is evenly curved in *nigrolunata*; in addition, the sacculus in *nigrolunata* is much smaller than that of *melanopa*, the saccular extension is narrower, not extending down to the ventral margin of the valve as in *melanopa*, and the digital plate at the costal angle of the valve extends about one-third of the distance across the valve but extends more than halfway across the valve in *melanopa*. Smaller but possibly significant differences exist in the genital structures between populations in Fennoscandia, the Alps, and Japan, suggesting that a reassessment of the status of *melanopa* in the Old World is also needed.

**A34. *Anarta decepta* (Grote, 1883)**
**= *Trichoclea postica* Smith, 1891 New Synonymy**
***Anarta columbica* (McDunnough, 1930) Revised Status**
***Anarta montanica* (McDunnough, 1930) Revised Status**

The new generic combinations of North American species resulting from synonymy of *Discestra* Hampson and *Trichoclea* Grote under *Anarta* (Fibiger and Hacker 2005) were addressed by Mustelin (2006). Although omitted by Mustelin (2006) as a valid species, *postica* had not been formally synonymized. The lack of consistent distinguishing morphological characters and variation in phenotype indicates that only a single species is involved under the two names. Similarly, *montanica* and *columbica* were raised to species status by Mustelin (2006) without further comment. We agree with this interpretation, since *A. columbica* and *A. montanica* occur sympatrically with *A. oregonica* (Grote) and differ in male genitalia.

**A35. *Sideridis* Hübner**

Examination of the Palaearctic *Sideridis lampra* (Schawerda), the type species of *Sideridis*, has shown that several of the species previously placed in *Trichoclea* (Franclemont and Todd 1983; Poole 1989) should be transferred to *Sideridis* (J. D. Lafontaine and J. Troubridge, personal communication). The characteristic features of *Sideridis* were described by Hacker et al. (2002). *Trichoclea* is a synonym of *Anarta* (see above), a related genus characterized by asymmetrical valves and a sack-like vesica, usually with a single, stout, bulbous cornutus. Accordingly, the following Nearctic species are transferred to *Sideridis*:

***Sideridis fuscolutea* (Smith, 1892) New Combination**
***Sideridis mojave* (Benjamin, 1932) New Combination**
***Sideridis uscripta* (Smith, 1891) New Combination**
***Sideridis ruisa* (Forbes, 1913) New Combination**
***Sideridis artesta* (Smith, 1903) New Combination**
***Sideridis vindemialis* (Guenée, 1852) New Combination**

*Mamestra vindemialis* Grote, 1875, currently placed in the genus *Sideridis*, becomes a junior secondary homonym of *Ceramica vindemialis* Guenée, 1852, transferred to *Sideridis* above. Since *M. vindemialis* Grote, 1875 is currently a junior objective synonym of *Sideridis maryx* (Guenée, 1852) no replacement name is proposed.

**A36. *Leucania comma* of authors, not Linnaeus, 1761**
***Leucania dia* (Grote, 1879) Revised Status**
**= *Heliophila dia* Grote, 1879**

Although *L. dia* was previously treated as a synonym or subspecies of *L. insueta* Guenée, Ferguson (1963) correctly recognized this taxon as a distinct species but erroneously ascribed it to the European species *L. comma* (Linnaeus) (Ferguson 1963; Franclemont and Todd 1983). Structurally, *L. dia* is quite distinct from *L. comma*, as pointed out by Ferguson (1963). However, it appears that Ferguson's diagnosis was based on a comparison of genitalic drawings of European *L. comma* (rather than dissections of what he took to be introduced *L. comma*) with North American *L. insueta*, since dissections of his NL specimens have revealed that they are not consistent with his diagnosis. Superficially, *dia* has a more prominent row of postmedial forewing dots, often reduced or absent in *comma*; in addition, the forewing markings are less streaky, with a less elongate wing shape than *comma*. Molecular data (mitochondrial DNA "bar code" fragment) confirm that all three are separate taxa, differing by 1.5%–2% sequence divergence. As such, *L. comma* is not known to occur in North America.

*Leucania dia* can be reliably distinguished from *L. insueta* by hindwing color; in *L. dia* the basal two-thirds of the hindwing is dark gray, with little or no contrast to the marginal area, whereas *L. insueta* has a predominantly whitish hindwing base and a dark margin (both illustrated by Handfield 1999: figures 10448 and 10449). *Leucania dia* was described from San Francisco, CA (holotype in the British Museum of Natural History, examined), and is widely distributed from NL to YT and south to CA, CO, and AZ. It generally occurs in more boreal habitats and at higher elevations than *L. insueta*, but the two are sympatric at many sites, for example, the southern boreal region and the Rocky Mountain foothills.

**A37. *Protorthodes incincta* (Morrison, 1874)**
**= *Taeniocampa utahensis* Smith, 1888 New Synonymy**
**= *Orthodes akalus* Strecker, 1898 New Synonymy**

There are no structural differences between AB material previously assigned to *P. utahensis* (type locality: UT) and *P. incincta* (type locality: IL), and the wing pattern and color are extremely variable and cannot be used to consistently differentiate these taxa. Comparison of topotypical *utahensis* and *incincta* has shown that a single, variable species is involved. This arrangement is also supported by molecular data for the *cox1* gene. Examination of a photograph of the *akalus* holotype (courtesy of M. Pogue) revealed that this taxon also represents *P. incincta*. The AB taxon previously referred to as *akalus* appears to be conspecific with *P. eureka* (Barnes and Benjamin) (type locality: Eureka, UT) (J. Lafontaine, personal communication) and we therefore treat this species as such. A critical comparison of *eureka* from the Great Basin and the Great Plains is needed.

**A38. *Euxoa adumbrata thanatologia* (Dyar, 1904) Revised Status**

The appropriate name for this species has been in question, as it is not clear how many species are involved, and the matter is complicated by the vast circumpolar distribution of the *Euxoa adumbrata* group of taxa. Bowman (1951) treated this species as *Chorizagrotis thanatologia* (type locality: BC). Lafontaine (1987) considered it to be a single polytypic species (as did Fibiger 1990), with *thanatologia* as a subspecies of *E. lidia* (Stoll) (type locality: [Europe]). Later, Fibiger (1997) resplit *lidia* and *adumbrata* (Eversmann) (type locality: Russia) on the basis of slight but consistent genitalic differences and considered *adumbrata* to be Holarctic. We follow Fibiger's (1997) species interpretation, and treat *thanatologia* as a subspecies.

**A39. *Euxoa furtivus* (Smith, 1890) Revised Status**

Lafontaine (1987) discussed several "forms" of *Euxoa idahoensis* (Grote), suggesting that some of these forms could be distinct species. Further research has confirmed that the taxon *furtivus* should be treated as a separate species, because it differs in pheromone composition and phenotype and because it occurs in sympatry with *idahoensis*. True *idahoensis* has dark blackish brown forewings with pale silvery shading on the forewing costa and on the reniform and orbicular spots, whereas *furtivus* has a brown forewing with a pale cubital vein and black sagittate spots in the subterminal areas adjacent to the subterminal line; phenotypic intermediates are rare. Illustrations were provided by Lafontaine (1987): Plate 6, Figures 40 and 41 for *idahoensis* and Figures 37 and 38 for *furtivus*. *Euxoa idahoensis* is mainly found in woodland habitats but occasionally occurs with *E. furtivus* in dry open woodlands; *E. furtivus* mainly inhabits open, arid habitats.

# Index

**All entries are listed by Species Numbers, not page numbers.** All genera, specific and subspecific epithets, and common names of species included in the AB checklist are included here, in regular font. We similarly list names from the ***Excluded Taxa*** list and the ***Appendix***, indicated by numbers preceded with an "E" in the former, and by an "A" in the latter. Genus listings refer to where each first appears in the list. Species numbers in regular font refer to the primary entry for that name; additional species numbers in italics indicate other species entries where they are mentioned. Additional specific and subspecific epithets that are referred to in the ***Notes***, ***Excluded Taxa***, and ***Appendix*** under another species entry, appear in the index in italics, with the pertinent entry numbers. Selected genera referred to under other entries are indexed in this manner as well. Insect species mentioned only in the introductory sections, and all plant species mentioned throughout the text, are not included in the index.


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